

In This Issue—Sells 200 Fords in Town of 500

MOTOR AGE

Vol. XLVI
Number 22

PUBLISHED WEEKLY AT 5 SOUTH WABASH AVENUE
CHICAGO, NOVEMBER 27, 1924

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**DEALERS! Think this over!
Since every new cheap car
delivered is simply applied
in part payment in the pur-
chase of a second hand one,
isn't it more profitable to
deliver ten on which you
make money than one hun-
dred on which you lose?—**

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President
Jordan Motor Car Company
Cleveland, Ohio



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Tens of thousands of motor car owners have listened to Hupmobile enthusiasts dilating upon the amazing economies of the Hupmobile.

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The owner of a car costing \$400 or \$500 more than Hupmobile, is surprised. Particularly if he is acquainted with the internal structure of his car.

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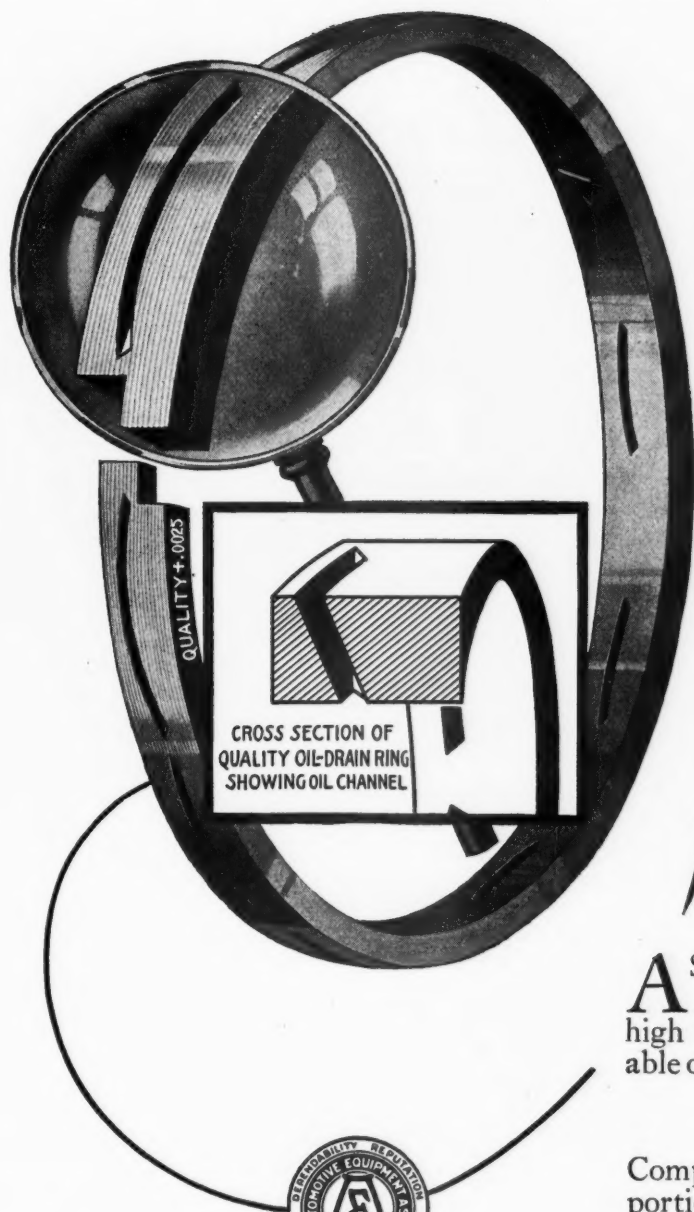
that mean longer life and lower costs; that in all important respects, it is as high quality as the highest-priced cars made today.

Hupmobile has the quality—and it is getting the story of its better engineering and construction across to the public in this powerfully effective way. It is much easier to sell Hupmobiles than it is to compete with such a car and such salesmanship.

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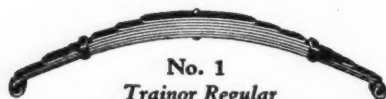
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TRAINOR



SPRINGS

MOTOR AGE

Reg. U. S. Pat. Office

Vol. XLVI.

No. 22

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MOTOR AGE is Published every Thursday by
THE CLASS JOURNAL COMPANY

Mallers Building, 5 South Wabash Avenue, Chicago

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MOTOR AGE

Owned by United Publishers Corporation, 239 West 39th Street, New York, CHARLES G. PHILLIPS, President; A. C. PEARSON, Vice-President; FRITZ J. FRANK, Treasurer; H. J. REDFIELD, Secretary.

Cable Address _____ Motage, Chicago
Telephone _____ Central 7045

OFFICES

New York—U. P. C. Bldg., 239 West 39th St., Phone Pennsylvania 0080.

Detroit—7338 Woodward Ave., Phone Empire 4890.

Cleveland—538-540 Guardian Bldg., Phone Main 6432.

Philadelphia—56th and Chestnut Sts., Phone Sherwood 1424.

Indianapolis—1212 Merchants Bank Bldg., Phone Circle 8426.

SUBSCRIPTION RATES: United States, Mexico and U. S. Possessions \$3.00 per year; Canada \$5.00 per year; All Other Countries in Postal Union, \$6.00 per year; Single Copies, 35 cents.

Member of the Audit Bureau of Circulations.

Member, Associated Business Papers, Inc.

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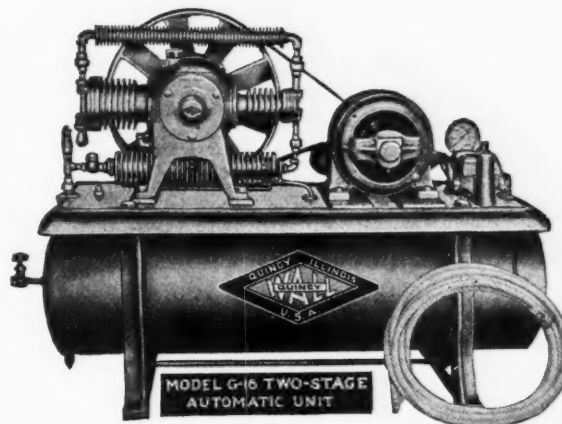
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ECONOMY

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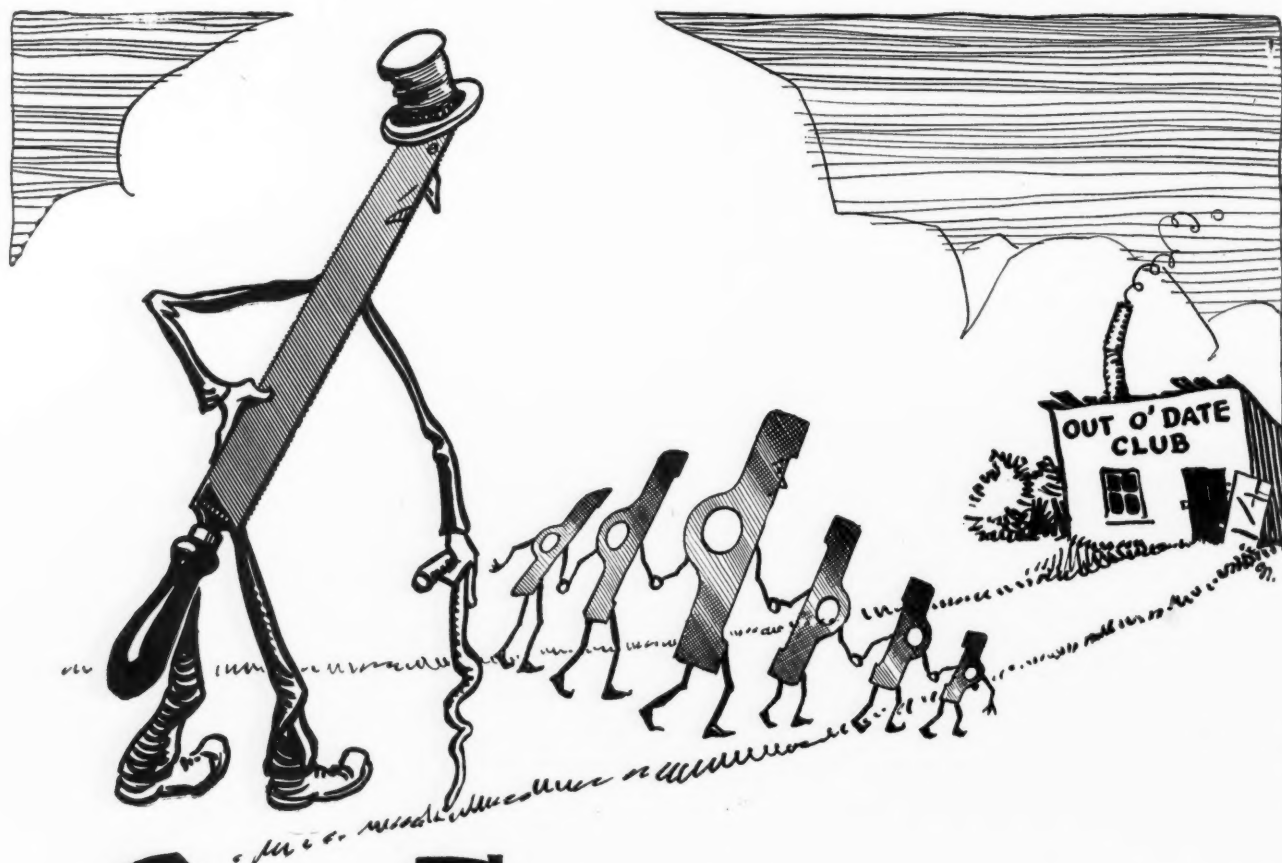
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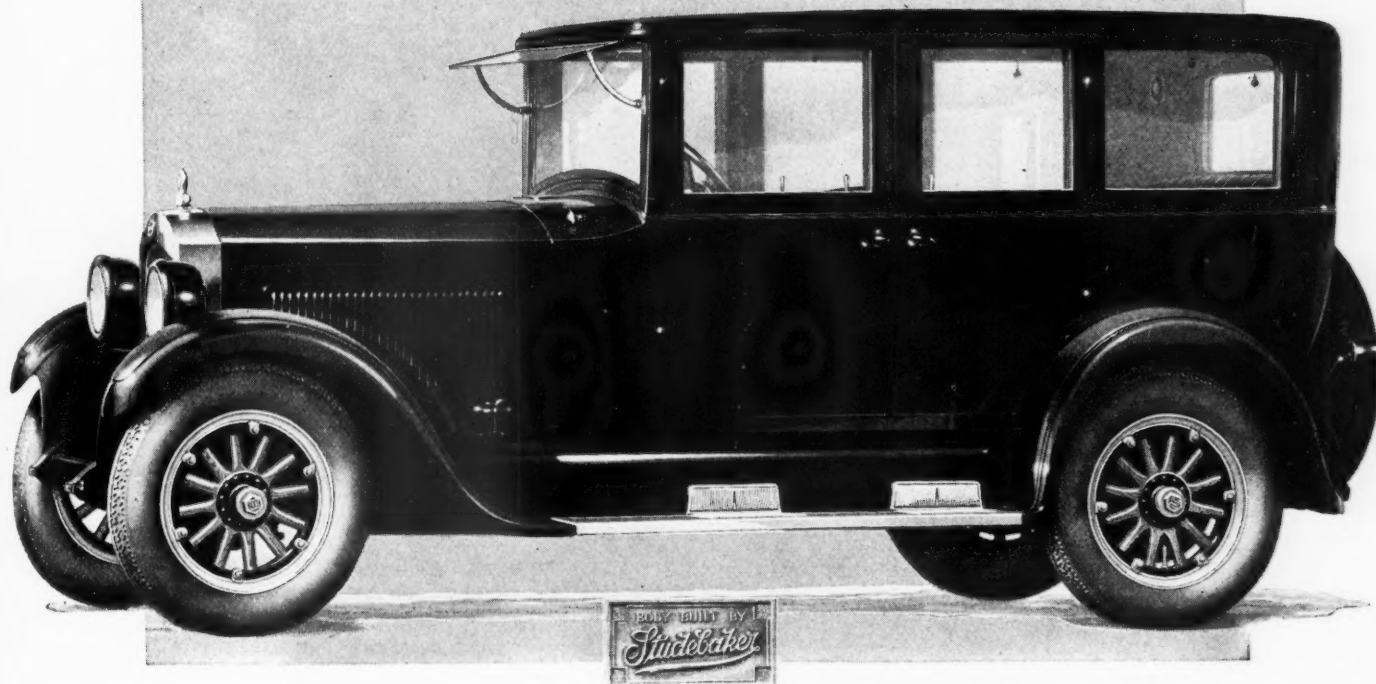
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5-Pass. Coupe	1495	5-Pass. Sedan	2150	7-Pass. Berline	2860
5-Pass. Sedan	1595	5-Pass. Berline	2225	4-wheel brakes, 5 disc wheels,	\$75 extra
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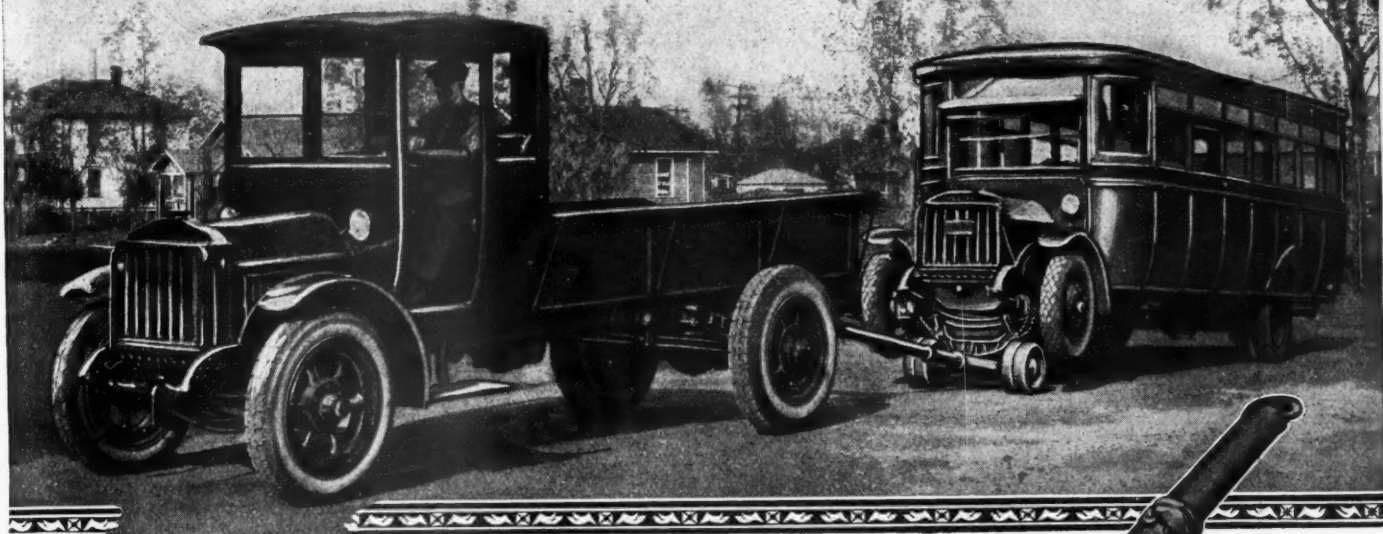
T H I S I S A S T U D E B A K E R Y E A R

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Oakland Motor Car Company, Pontiac, Michigan

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A quicker, easier, safer way to bring in disabled trucks



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--owners of truck
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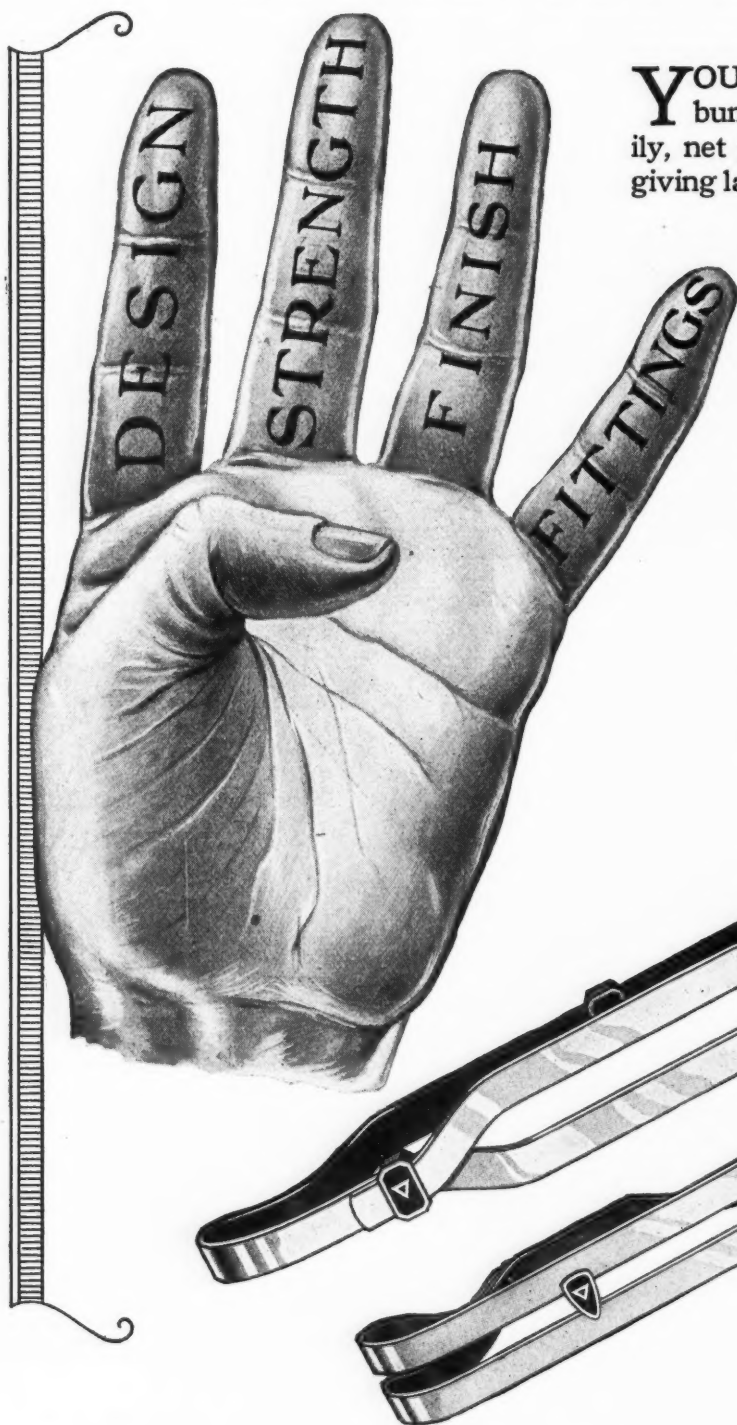
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FITTINGS. Weed Bumper Fittings are designed especially for the car for which they are recommended. They fit perfectly; do not rattle loose; and they appear, when attached, as a part of the car itself. Simple to attach. Full instructions packed with each set of fittings.



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WORLD'S LARGEST MANUFACTURERS OF WELDED AND WELDLESS CHAINS FOR ALL PURPOSES

MOTOR AGE

Vol. XLVI

Chicago, November 27, 1924

No. 22

What The Puritan Fathers Lacked



Woman Dealer Sells 200 Fords a Year

How Wife as Manager, During Husband's Illness, Developed Business from Frame Shack to New \$15,000 Building

By A. H. PACKER

WAYNE MISENER had been a mechanic and a good one and knew an opportunity when he saw it. Two of them came his way. At the close of the world war he had the opportunity to get the Ford agency in Mazon, Ill. That was his second opportunity. The first one had come when he robbed the telephone company of a capable operator and made her his partner both at home and in business. That had happened when the war clouds lowered and Misener answered his country's call.

Then came the armistice, the homecoming, the opportunity to get the Ford contract—but two weeks later, Mr. Misener was stricken ill and unable apparently to make use of the advantages which were rightly his. It is at this point where Mr. Misener showed that his judgment had been good, for Mrs. Misener, determined to annul the attacks of discouragement and fate, took hold of the infant project and carried it through.

So we leave Mr. Misener bound for the north woods, there to pursue the elusive bass and wary muskie—thus to recover health and strength, while we follow his faithful wife and partner in her business venture.

Do business problems confront you? Are there times when it seems as if you want to give up? Then think of this woman, with one mechanic as her only service personnel, with herself as the manager and only salesman, with a wooden shed for a building, with limited funds, limited equipment, starting out in a small town to make good in the establishment of a business. Perhaps necessity made it possible, perhaps some of the practice in being courteous over the phone stood her in good stead when it came to soothing disgruntled customers. Be that as it may, the facts remain.

That was some six years ago. Recently a new \$15,000 building was completed, built out of the profits of the



Mrs. Wayne Misener, who manages a Ford business in Mazon, Ill., where the census takers in 1920 counted 442 inhabitants. She sells 200 new Fords a year

business. The original contract called for 60 cars a year. Now it reads 200, in addition to tractors.

The building measures 75 ft. by 100 ft. and the ample shop has not a single pillar or post to interfere with the movement or storing of cars. Broad arches span the space from wall to wall, while large furnace pipes overhead indicate that ample provision has been made for both ventilation and heating.

On a prominent corner stands the new place, a sheltered drive incorporated where thirsty tanks may be quickly filled, and just inside the sales and show room presents an appearance of order and cleanliness. In the old place, the dusky loft had to serve as a storage place for parts, but here metal bins present a striking contrast. But new buildings built for service are much alike—the kernel of the story lies deeper.

Studies Human Nature

"It was hard sledding for a time," said Mrs. Misener. "My one mechanic, Chris Hansen, who is still with me and

is in charge of the shop was the only man working for me. He did all the service work. I kept going, selling the cars, finding that a study of human nature together with faith in my goods was the best assistance I could get in making sales.

"I remember one hard customer I tackled. I knew he had money and I also knew that he needed a car in his business, but he always said no. Finally I went out to his place one morning and stayed there. It came time to churn and I still hung around, then dinner time approached. Finally he signed the order to get rid of me. Those tactics, of course, might be all wrong in many cases, but in his it seemed to be necessary. In other cases I often let prospects alone until their minds are made up. And that's why I say a study of human nature is necessary."

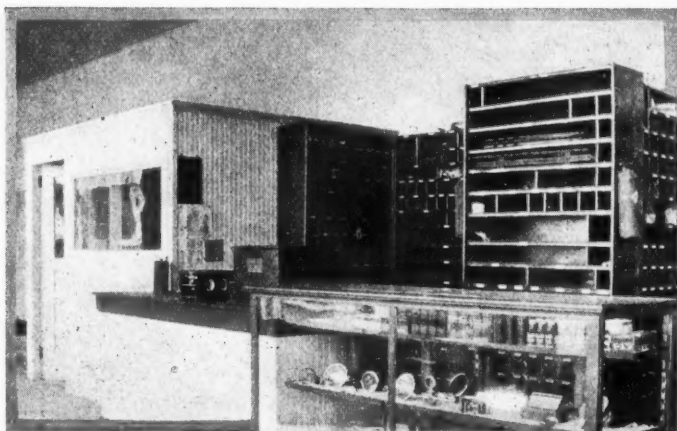
Then a question was asked Mrs. Misener as to the method she used in taking care of used cars and the answer to that was quite unusual.

"I agree with my prospects as to the value of his used car."

That sounded strange and dangerous at first, but Mrs. Misener continued:

"Then I proceed to show the prospect that there are three parties to the transaction. First the buyer of the new car, who knows exactly what he is getting, second the dealer selling the car, and third the buyer of the old car, and I bring out that the sale must be satisfactory to all three. Then after agreeing with him as to the value of his old car, I start to show the difficulties in the way of making someone else who does not know either the car or its owner, realize the value that is there.

"I must sell his car and make a profit on it to someone who does not know what is inside and who judges only by



How parts and accessories are stored and displayed in new building

In a Town of 500

the appearance and the age of the vehicle. Then in nearly every case I have no further trouble, for the reasons are true and the prospect, if at all fair minded, will see the reasonableness of my contentions."

Handles Customers Tactfully

It has sometimes been said that that "To win the argument is to lose the sale." And this same rule doubtless accounts for the success Mrs. Misener has in taking in the old car at the right price, for she agrees with the owner first, and then gently leads him away from his own conclusions without offending him.

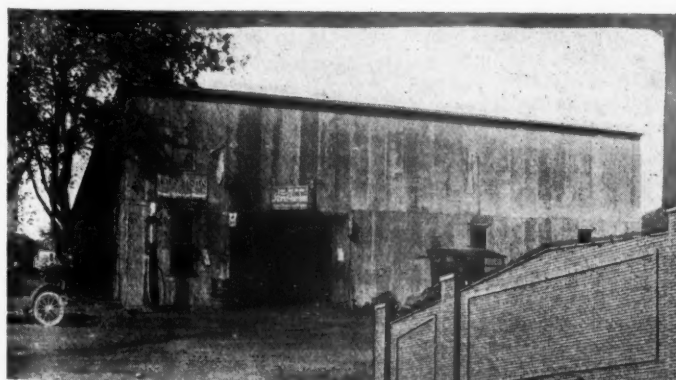
Surely she deserves the success she has had.

"We started out as I said with myself and Chris running the whole works, but soon I had more than I could handle. Then a young fellow came along and wanted a job. I needed a salesman but not one of the ordinary variety, so I asked this fellow what experience he had had. He had never sold anything, so I hired him and trained him my own way. At first we went out together, but as soon as he learned my method he went alone and made good."

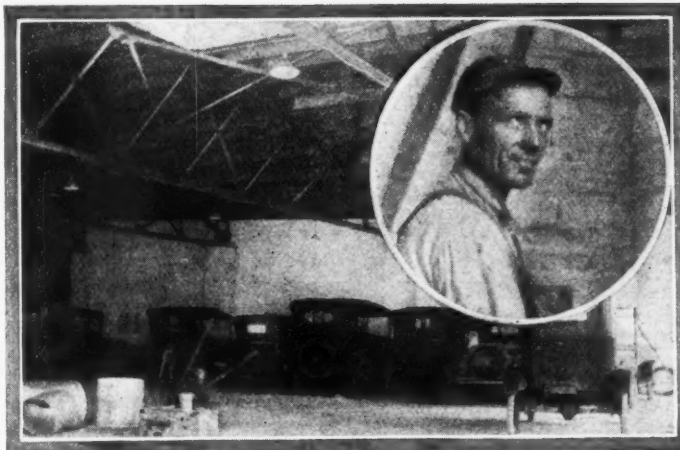
As these highlights on the business were being told, the new building was being inspected, and the remark was made that often a dealer would have a fine building but would not do enough business to cover the overhead which the fine equipment entailed.

Small Items Watched

"That's where the small items have to be watched," said Mrs. Misener. "I suppose that I have watched small details to which ordinarily no attention would be paid. For example, we make every trip count. If we go out on a drive for pleasure to see some one, we also make it a point to drop in and see a prospect on the way home, so that the trip pays for itself. It may seem funny to watch things which seem so small, but it makes a difference. Our sales are made in the mining and farming territory around here as well as in town and you have to travel a lot of miles and have to make the traveling count in order to show a profit."



Above—Old frame building in which Mrs. Misener started business; right—new \$15,000 building erected out of profits



The big new shop has no pillars or posts in it. Insert—Chris Hansen, shop foreman

"And how about advertising?" was the next question, for in such a small community some dealers have felt that everyone knows them and no special advertising efforts should be needed.

Believes in Advertising

"Every week," said Mrs. Misener, "some advertising effort is made, usually by mail. It may be just a word of caution about the battery and its care in winter in which we bring out the fact that we are equipped to give battery service. Again it may be about tires and a special offer that we wish to make, or we may be running a special sale on some accessory. The exact subject of the message is of minor importance. The main thing is to keep our name before the public. Of course each message will sell some accessories and bring some direct result, but the indirect result that does not immediately show up is equally important."

"When we opened the place we invited everyone for miles around, and the fact that 1500 persons came showed the interest we stirred up. We gave away a Ford car and staged a dance, all of which cost us money, but it was advertising that returned the money to us."

"Now, Mr. Misener is coming back, for he is feeling fine again and going strong and we intend to establish another Ford agency in some adjoining town and each manage one of them."

Surely an ideal way of determining who really is the better half.

Experts Review Service Progress

Balloon Tires, Nitro-Cellulose Paints, and Tetra-Ethyl Lead Among Subjects Covered at Cleveland Convention from Standpoint of Maintenance

By J. HOWARD PILE

EIGHT widely divergent subjects occupied the attention of the 200 delegates at the convention of the Society of Automotive Engineers and the Service Division of the National Automobile Chamber of Commerce at Cleveland, Tuesday and Wednesday, Nov. 18 and 19. The subjects were nitro-cellulose paints, electrical equipment standards, ethyl gas, engineering in service, service organization, service records, balloon tires and the training of mechanics.

The subjects presented were timely and of interest and the speakers were undoubted authorities in their various lines. In fact so much interest was shown by the discussions following the various papers that there was no opportunity to present additional subjects besides the papers.

Subjects Given Service Slant

The plan of the convention was to include subjects which should be of interest to the three big branches of the industry, service, engineering and sales, but the delegations were very largely from the first two branches. While some of the subjects are not new, having been presented in other forms at other meetings, they were given a service slant that made them the more valuable in view of the character of the audience. For instance the subjects of nitro-cellulose paints and balloon tires have been taken up a number of times at engineering sessions, but in preparing the papers for this meeting the speakers brought the subjects up with the service end in plain view and the discussions that took place after the completion of the papers showed that the change was advisable.

One of the innovations at this convention was in having the chairman a manufacturer. Some little time ago Alvan Macauley, president of the Packard Motor Car Co., was made chairman of the service committee of the National Automobile Chamber of Commerce. The previous custom had been to have as chairman one of the company service managers. The new department met with approval.

Alfred Reeves, general manager of the N. A. C. C., made a short opening address, welcoming the delegates and stressing the importance of service to the automobile industry. He introduced the permanent chairman, Mr. Macauley. In speaking of automotive service, Mr. Macauley said that in many lines of manufacture, service was depended upon to bring in the greater part of the profits, but that with automotive service in the past the company that broke even was lucky and more often it lost money in spite of the car owner's private opinion that the business

must be a gold mine. He said that the manufacturers of safety razors and phonographs could well afford to give the original products away and depend for profits on the sales of blades and records. In the past, the service experiences of many companies has been both costly and painful. The automotive industry has never had a chance to sidetrack its obligations to the owners of its products.

Service Conditions Improving

Mr. Macauley said, however, that conditions were rapidly improving in service and that this branch could be made both satisfactory to car owners and profitable to dealers and distributors. He called attention to the fact that during the year 1924, \$2,500,000,000 had been spent by car and truck owners of the United States for service and equipment of all kinds, excluding gasoline and oil, and that this was nearly as great as the amount expended in new car and truck sales. Flat rates, he held, were responsible largely for the advance made in the service art in the past few years.

L. V. Pulsifer, vice-president of Valentine & Co., presented the first paper which covered nitro-cellulose paints as viewed from a service standpoint. Cotton is the base of this kind of finish and the paper assumed the aspect of a laboratory course as Mr. Pulsifer conducted many laboratory operations, tests and experiments on the platform. He first showed how the cotton was nitrated and then showed tests which indicated that the cotton had undergone chemical changes.

Nitro-Cellulose Finishes

The dilutants or thinners are made of various materials including softeners, volatile and non-volatile oils and resins. When combined in the proper manner, these evaporate and harden, leaving a tough hard film of cotton which firmly adheres to the metal surface. When not properly blended, the material may chalk off just as if a coat of gasoline and whitening were applied.

Mr. Pulsifer said that one of the chief differences in structure between varnish finishes and nitro-cellulose finishes was that the varnish finishes were laminations, each coat being entirely separate whereas the nitro-cellulose, owing to the fact that each coat as applied dissolved a portion of the coat under it, became one solid coat.

So far as the service shop is concerned, Mr. Pulsifer said that it was just as cheap and just as easy to apply the new type paints as the varnish finishes, and in many cases cheaper because some of the equipment such as drying ovens could

be dispensed with. It is of great importance to have surfaces perfectly clean and free of grease before applying.

Drying Is Rapid

Nitro-cellulose finishes cannot be successfully applied with a brush as the drying is so rapid. Air brushing is the only satisfactory way.

These materials can be applied over surfaces previously finished with the same kind of materials if the surfaces are smooth, in good condition and show good adhesion to the metal. They cannot be applied over old varnish. This must be removed right down to the metal. They can, however, be applied over baked enamel provided the enamel is in proper condition and is not scaling.

A. M. Dudley, manager of the automotive engineering department of the Westinghouse Electric & Mfg Co., read his paper on "Standardization Work of the Automotive Electric Association—its Possibilities in Simplifying Electrical Service." He told of the recommendations that had been made by the association to reduce the number of types of electrical generators and motors and to promote interchangeability. He also told of the efforts toward standardized wiring on all cars.

Before starting the Tuesday afternoon session, chairman Macauley called upon Harry Horning, president elect of the S. A. E. Mr. Horning said that while there had been many problems to be solved in service, yet probably 90 per cent of the problems were psychological. The biggest accomplishment to be made in service is in getting the customer in the right frame of mind. This is particularly difficult because in most cases the man is not in a very amiable mood when he has to go to the service station for any purpose.

Effect of Ethyl Gas

Probably one of the papers looked forward to with most interest was that of Thomas Midgley, Jr., vice-president and general manager of the Ethyl Gasoline Corp., on "The Effect of Ethyl Gas Upon Engine Operation." Mr. Midgley before getting into his paper took occasion to explain what really happened at the Bayway, N. J., plant where a number of men died from lead poisoning. It seems that tetra ethyl lead has been manufactured successfully and without injury to men at the plant at Dayton, for some time, but that a newly developed process was being worked out at the Bayway plant. In some way or other, there was a slip up in the method and either the proper precautions were not employed to protect the men or else some

new elements came into the new method of manufacture which were not present in the old method. So far the investigations have not disclosed the exact cause.

As to the danger of tetra ethyl lead to those handling it after it is manufactured, Mr. Midgley said that it was about one-twentieth as poison as bichloride of mercury which is sold to the public. However the concentrated material is not dispensed to the public, but is put into the gasoline so that the strength is only about 1 part in 1300 and there can be no danger whatever from lead poisoning. Investigations have been under way for some time as to effects of the misuse of ethylized gasoline, three such misuses being washing parts in ethylized gasoline, washing clothes in it and using it in an alcohol lamp to make toast. The first two misuses, so far had been proved harmless, but deposits of lead salts would be made on the bread being toasted.

It was stated that there was positively no harmful effect from exhaust gases of an engine using ethylized gasoline.

Finds no Corrosion

As to the effects on the engine, Mr. Midgley said that there was no corrosion either up to the point where the gas enters the cylinders nor afterward. There is a coloration of the carbon deposit. Ordinarily the burning of tetra ethyl lead would result in a deposit of lead oxide after combustion and to prevent this ethylene dibromide is added which converts this to lead bromide, a gas at temperatures of combustion. The carbon deposit is colored anywhere from silver to dark brown. Lubricating oil is changed from the familiar black to a chocolate brown. Neither of these cases of coloring affects the engine to the slightest degree.

After disposing of the supposed harmful effects of ethylized gasoline, Mr. Midgley took up its advantages. Primarily, the material is for preventing detonation on knocking in engines with high compression. It can be used in any engine that shows a knock which is due to carbon on other high compression effects. It will not cure loose bearings or piston slaps or knocks in the transmission. At present the company is seeking to get wide distribution so that as soon as possible, engine manufacturers may increase compression ratios which will result in increased power and efficiency. Where carbon deposits are of a muddy nature, they will be removed by the material, but where it is baked on hard, it will not remove them.

Asked specifically what effects would be produced by using ethylized gas together with an extensively advertised and used carbon remover, Mr. Midgley said that the two materials would form new chemical combinations so that neither of the materials could perform its work properly and he suggested that either one or the other be used, but not both at once.

Service an Engineering Problem

The concluding paper of the first session was "The Need for More Engineering in Service," by George H. Duck, busi-

ness manager of the Commercial Car Journal and Motor Transport. Mr. Duck said that for a long time the service-ability of motor vehicles had been sacrificed for great production with the result that the car owner and the service station found it different and expensive to repair and maintain the vehicles.

Service, according to Mr. Duck, is really an engineering problem and there is a great field in service for members of the engineering profession. At the present time the service station has not recognized this need to the extent that engineers can secure remuneration equal to what they receive in other fields, but there is a growing tendency to make things more attractive from this standpoint.

Owing to the absence of H. N. Davock, service manager of the Packard Motor Car Co., his paper on "The Organization and Conduct of a Modern Service Station" was read by Clayton Hill. The paper reviewed briefly the early chaotic conditions of repair prices, parts prices and shop equipment. Mr. Davock stated that the prices of automobile parts today are governed largely by competition of replacement parts and that the Packard Motor Car Co. was making a consistent effort to market its parts at at least as low a price as any competing replacement part of equal quality. He advocated pricing parts so that there might be a small profit or no profit at all on some articles while the prices of some other articles might be priced to make up for this. Other lines of merchandise were handled this way, he said, the grocer selling sugar at practically no profit, making it up on apples or canned goods.

Special Prices on Quantity Orders

One important recommendation in the Davock paper was that factories make special prices on quantity orders. This has been advocated for a long time by some large dealers and distributors, but comparatively few of the factories have so far taken any definite action. Mr. Davock very strongly insisted that the proper way to sell parts in competition with the replacement market was by real honest competition and not by strong-arm methods. He felt that success in marketing original parts would only be obtained by meeting and beating competitive prices.

In considering the organization of a service station, Mr. Davock stressed the importance of intelligent merchandising methods which have often been overlooked by the retail service station. He showed by means of lantern slides what had been done in four branches where organization and better selling methods were being hammered in. As a result of a number of reports, inventory of parts was cut down and turnover increased until the cost of marketing merchandise to the value of \$1000 was reduced from \$160 to \$82. In this connection it is especially interesting to note that the net profits increased from 1.3 per cent to 11 per cent in four years for service only due to cutting down useless overhead costs and applying merchandising

methods, flat rates and good business principles.

Mr. Davock stated that as a result of this cleaning up of methods and getting on a good sound basis of organization, 39 per cent of the net profits from the particular branches had been profits from service alone.

S. V. Norton, service manager of the General Motors Truck Co., in his paper on "Utilizing Motor Truck Service Records" showed by means of lantern slides how dealers, distributors and branches could assist the factory engineering and parts departments by the intelligent reporting of troubles. One very remarkable feature of Mr. Norton's paper was his advocacy of the factory service department having charge of final inspection before the vehicles are turned out of the factory.

The paper by James E. Hale of the Firestone Tire & Rubber Co. on "What the Service Department Needs to Know About Balloon Tires" was especially timely as was evidenced by the lengthy discussion which for a few minutes got quite violent. Mr. Hale first told of the principles of construction and theory of action of the balloon tire.

Balloon Tire Performance

Mr. Hale said that although there was at the present time a great number of balloon tires sizes, and that considerable confusion was being caused, yet this was something that would cure itself. He said that at the present time it is necessary for a tire dealer to stock a minimum of tires to the value of \$17.00 in order to meet ordinary demand in both balloon and high pressure tires.

Some interesting figures on balloon tire performance were given as well as results from other viewpoints. Reports after several hundred thousand miles of service on taxicabs showed the balloon tire equipped cabs to be giving 13.5 miles to the gallon of gasoline with balloon tire equipment to 12.2 miles to the gallon with high pressure tires.

The use of rebound checks is considered a necessity with balloon tires, otherwise the vehicle will have a disagreeable and uncomfortable motion.

The subject of inflation is a most important one to the dealer and service shop. Over 99 per cent of all tires brought in for adjustment have defects which have been caused by underinflation.

All balloon tires require flaps and the toe-in of the front wheels should be between $\frac{1}{8}$ and $\frac{1}{4}$ in.

A very important feature of tire pressure recommendation is that the pressure should be determined by weight for the rear wheels and that this same pressure then be carried in the front wheels although they may be carrying a lighter load.

Suggestion for Repairing

In repairing balloon tires it is suggested that the bruise be cleaned and then built over and vulcanized. Tearing out fabric and replacing as in a sectional repair has been found unsatisfactory for balloon tires.

(Continued on page 39)

Profitable Use of Plant Capacity

Automotive Merchant's Building Should Be So Laid Out and Arranged as to Get the Most Good from the Space Available

By B. M. IKERT

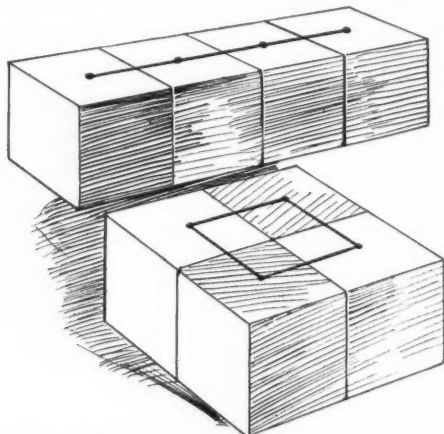
PROFITS SERIES

Utilization of Plant Capacity—No. 1

TALK to anyone who has built a house and he will tell you almost invariably that were he to do the job over again he would make this or that room larger, put the pantry somewhere else or change the layout of the basement.

Many who have built structures for dealer establishments, service stations or garages find that they too would make changes in their present buildings were they to build again.

Many are trying to do business in a building entirely unsuited to their needs



Here are shown four blocks arranged in two ways. Both arrangements require exactly the same ground area, but note how much more compact the lower arrangement is. Any point in the blocks is equidistant from the center. In a building this means saving footsteps.

or to their eventual requirements. Buildings are too large or too small. Both conditions are equally bad when it comes to making money.

In the one case the cost of what might be termed "plan maintenance" is so great that the revenue of the various departments is not sufficient to offset it. Where a building is too small the crowded condition makes efficient work impossible and when that is the case, profits are slow in accumulating, if indeed, the establishment makes any profits at all.

In a crude way the drawings of the match box illustrate a condition of waste space or a poor use of capacity. Orderly arrangement whether it applies to matches in a box or to the general layout of the departments in a business is the first essential towards efficiency.

Every individual or institution wants to get as much out of a given amount of space as possible. The purpose of the match box illustration is simply to show that if the matches are carefully laid in the box many more can thus be accommodated than if they are carelessly picked up and dumped into the box. Unfor-

tunately many dealer establishments, service stations and garages are run on the latter basis.

Some Places Unsited for Purposes

The kitchen cabinet of today is a good example of efficiency when it comes to having a place for everything and the whole confined in a relatively small space, to save the busy housewife many a step. The modern dining car is another instance of getting the most out of little space. Every inch of room in the kitchen of a dining car is put to good use. Many other such instances might be cited to illustrate economical use of space and good planning.

When you talk with many dealers or owners of garages and repair shops they will tell you that very often their overhead eats up too much of their profits. Again, a dealer may tell you that he could make more money if he had a larger place of business and could lay out things as he should like to have them. Many times too much space has been given to a salesroom and not enough to the rear portion of the building which generally is used for the shop or service department. Sometimes you will find too high a ceiling so that it costs too much to heat a building. The latter applies chiefly to the one-story buildings used by the small town dealer. Again, if a ceiling is too low there is trouble from exhaust gases and the atmosphere of the whole building is poor and calls for some sort of ventilating system if efficient work is desired.

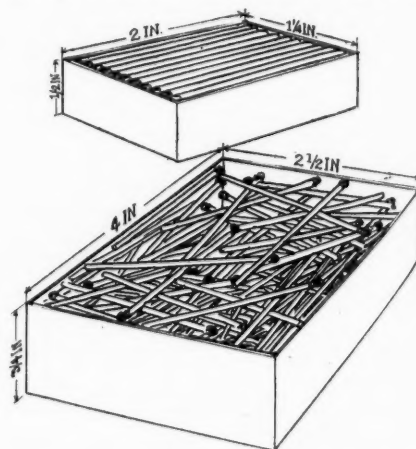
The large building usually has a heating and ventilating system controlled from a single source so that it is fairly easy efficiently and with minimum cost to heat and ventilate the structure. But the layout of the small town dealer's place of business is very often one wherein such practices cannot be carried out. Many such places were used for other purposes and the result is that they are not altogether suited to their present purpose.

Where a building has been found too small an addition may have been put to it, or several such additions and the result is that we have a rambling structure which is anything but an economical layout, either from the standpoint of doing business or maintaining.

The illustration of the four cubes shows what is possible when it comes to using plant capacity most efficiently. Lay them out in a row and you will have an arrangement which is not nearly as good as when the cubes are arranged into a square. It will be noted that a line drawn through the center of each cube connecting it with the cube next to it is a

straight line when the cubes are arranged as an oblong, but becomes a square when the cubes are arranged as a square. Thus in the case of the oblong the end cubes are farther away from the center of the group than are the two middle cubes. This is not so in the square arrangement, because there any point similarly placed in each cube is exactly the same distance from the center of the square.

Of course, every building which is put up by a dealer usually has to be built according to local conditions as to streets, alleys, adjacent buildings, etc. The ideal cannot always be attained in this. Nor can it always be attained in the buildings which have been used for other purposes and are revamped for a garage or service station. Such buildings when rearranged usually represent a compromise. A little room has to be taken from the salesroom or display room and given over to the shop, or an entrance may have to be sacrificed to make room for an accessory display. The greatest care must be used when revamping a building to make sure that the best arrangement has been obtained so that the greatest amount of good is gotten out of the building. As before stated, the large building which in nearly every case has



At the top we have 50 matches neatly arranged in a box measuring $\frac{1}{2}$ by $1\frac{1}{4}$ by 2 in. The other illustration shows the same number of matches carelessly scattered about in which condition they require a box some $\frac{3}{4}$ by $2\frac{1}{2}$ by 4 in. Crudely this illustrates waste of space or a poor use of capacity.

been laid out by an architect is not such a prolific offender as is the small building of the small town establishment.

Locating the Entrance

The location of a building in the block has much to do with the general arrangement of the interior, particularly as re-

gards the relation of one department to another. If the building is on a corner, the display room can be treated entirely different from one when the building is located in the middle of a block. The direction of light and availability of air for ventilation are influencing factors in placing the shop. The departments which have much to do with one another should by all means be located so that communication between them is possible with the least amount of lost time. The latter is well illustrated in the square arrangement of the cubes referred to in preceding paragraphs.

For some reason or other most of the small town dealer buildings and garages are laid out with the entrance for cars in the center of the front of the building. While it is true that this gives a more symmetrical building it is doubtful if the arrangement is any better or even as good as placing the entrance on one side of the building. The center entrance splits up the building often segregates departments which should be together. The side entrance, for example, makes it possible to keep the display room, accessory department, offices, rest room, to between them this is not so easily accomplished. A further advantage of the side entrance is that all the window space can be used to better advantage for display purpose. A car cannot be properly displayed in a window of a building split up by a center entrance, that is, if we assume the building to be on a lot some 50 ft. wide.

We believe that this problem of locating the entrance is the first thing the dealer should solve. Everyone wants a neat looking building, of course, but from our experiences we have found that a handsome structure so far as the exterior gether. This is important to the small town dealer, because he cannot afford to have a man for each department and when these departments are thus kept together, one man or a girl can look after most of the business. Obviously if the departments are split up by a driveway is concerned, is often a most inefficient building as regards the interior arrangement. Whatever may be gained from a good looking exterior will be lost by the poor handling of business owing to a lack of properly locating one department to another. With all due respects to architects, we believe the dealer or garageman should not let the architect be too insistent about placing the entrance in the center of the structure just to get a good looking building. The architect does not as a rule know the automobile business and to that end the dealer must insist upon certain things which he knows the business demands. It is far better to plan a building from the inside out, rather than the other way about.

Three Separate Departments

In planning a building for the average small town dealer the business can be considered as three distinct departments and these departments can be arranged to suit local requirements in nearly every case.

These three departments or divisions consist of the following:

- 1—The salesroom and office group.
- 2—The repair shop.
- 3—The garage.

These three groups should so far as possible be kept separate, but in the case of a small establishment the shop and garage probably will be one.

The first group takes in the salesroom or showroom, the office, accessory department, rest room and as is often the case, the stockroom.

The second group comprises the various departments of a shop such as the machine shop, battery department, electrical department, tire repair department, paint shop.

The garage is that portion of the establishment where cars are stored, new and used, together with those cars which are being repaired. It also houses cars of tourists or those whose owners have monthly storage rates.

In some cases, particularly where one or two makes of cars are handled by the same dealer, the establishment will take in all of the above departments. Others may not sell motor cars and, therefore, will dispense with the salesroom and perhaps some of the others.

There are those who operate what might be termed strictly a garage for storage purpose and in connection with this have a repair shop, battery and tire repair department. Such an arrangement again calls for a different treatment than when car sales and service are combined under one roof.

Men Paid for Walking

Regardless of what the combination might be it is well to ever bear in mind the reference previously made to the arrangements of the cubes. While the square arrangement is not always possible nor even practical in some cases, the chief thing to bear in mind is that the available room be used intelligently.

Too many places are laid out and operated so that the men are paid for walking instead of working. We recently observed such conditions in a dealer's place of business. Here the repair shop was at the most distant end of the building and the stockroom was placed on the second floor above the showroom and offices. The car handled by this dealer is in the low price field and the replacement of parts is quite an item. But every time a mechanic needs parts he must walk from the rear of the building to the front and then upstairs. It is a typical case of where the men have to do too much walking.

Another case we recall is that of a two-story building wherein the stock room is operated in connection with the accessory department on the first floor. This is done to help customers who come in to buy parts. The shop is on the second floor but there is no way to get parts to the shop other than by having the men go down for them or by sending them up on the elevator, which naturally runs so slowly that it is quicker for the men to go down for them.

Frequently valuable space is given over to one department that might better be put to a more profitable use. Take the case of a showroom in the small town establishment. Suppose the dealer is located in a section of the country where the deep snow exists for several months of the year and the highways are blocked to traffic. Car sales at such times are slim, and if he has no new cars on hand for the show room, the latter will represent just so much waste space. He may have a certain amount of shop work to do but as is often the case the shop or garage part of the building is quite large and difficult as well as costly to heat. There we have a case of high "plant maintenance" where the profits from the work done are hardly sufficient to pay the overhead. No mechanic can do a good job in a cold room but certainly it is not good business to have to heat an entire building for the sake of one department.

Utilizing the Showroom

One dealer expects to overcome such a situation by using his show room as a temporary shop for the winter. He will cover the walls to a 9-ft. height with plaster board. This is done so that the original walls will not become soiled. The floor is cement. This he will clean off in the spring and paint. He plans to have a couple of portable work benches and, inasmuch, as his parts stock is handled in connection with accessories close to the showroom, he is in a good position to profitably carry out a winter program from his present layout. He plans to leave unheated the garage portion of his place and also the shop at the rear, using both places to store used cars and cars coming in for repairs.

One has but to spend a day or two with a dealer in a small town where heavy snow plays havoc with business to appreciate what this dealer is about to do. As he well said, "People in this part of the country will not come around to look into the showroom at cars when the snow is deep, so I might as well put the place to good use."

Allocation of Space Important

This brings up the point that often too much space is given to one department that rightfully belongs to another. Almost always a shop is too small and a salesroom too large. A dealer recently complained that his shop was too small. Investigation showed that he was right. Yet he had some 25 or 30 used cars in another section that represented waste space, especially since he hinted that these cars would not be moved until spring. If then. He was heating the shop as well as this section of the building housing the used cars. He might better have junked some of these used cars, put the others in what is now the shop and then turned the "used car" department into a larger shop. At it was his three mechanics were in each other's way, while there was room "to burn" in the used car department in which hardly a soul ventured all day.

(The profit series article in next week's issue of Motor Age will be on "Departments Essential to Transportation Store.")

Progress Seen in Tire Dealer Field

Two Classifications Adopted at Annual Convention at Akron—Burger Re-elected President

By A. V. COMINGS

WITH almost 700 tire dealers in attendance, representing every state in the union, the fifth annual convention of the National Tire Dealers' Association at Akron Nov. 18 and 20, proved in point of numbers the most successful gathering ever held by this organization.

By convention action and by resolution the tire merchants showed in every session that they want to do all they can as an organization to make the retail tire business a better business, with more profit in it for dealers and factory alike, and more satisfaction in it, too, for the car owner.

Officers Are Named

George J. Burger, who has served the association so well during the past year, was re-elected president.

J. W. Waber, president of the Chicago Tire Dealers' Assn., was named vice-president, and directors were elected as follows: P. J. Quigley, Memphis; Henry Alden, Minneapolis; Arthur Roderick, Akron; Clay Manville, Pittsburg, and Herbert Ruhake, Milwaukee.

True to his promise that the fifth annual convention would see a concrete definition of a real tire dealer, President Burger surprised and pleased the members by launching into the subject in his opening talk at the first day's session. He not only defined one type of dealer, but added several more and outlined just what the factory-dealer relation should be in each case.

Mr. Burger made no suggestion that any type of legitimate tire dealer be eliminated, but did suggest what he considers a fair classification of the various tire merchants now in the trade.

The first class of dealer Mr. Burger designated as the Type AA dealer. This dealer, he maintained, should be the one who represents one tire manufacturer 100 per cent, and he should receive a 10 per cent better price from that manufacturer than is given to the regular preferred list of dealers.

This type of dealer, he said, should be allowed to place one monthly stock order, and if he has to order between these should pay an extra 5 per cent for handling charges.

Classifications Explained

Mr. Burger defined a Class A dealer as one who represents two manufacturers, carries an adequate stock, and gets a 5 per cent preferential price from his manufacturers. Requirements as to monthly stock orders are the same as for the Class AA dealer, and on orders placed between these monthly requirements, the manufacturer's 5 per cent handling charge would absorb his differential.

Representing three or more tire manufacturers would place the dealer in Class B. Other requirements are the same as for preceding classes, except that as this class of dealer gets only the regular preferred dealer prices, he should be charged 5 per cent over these for orders placed between monthly requirements.

Motor car dealers are placed under the classification.

Under Class C Mr. Burger placed gaso-



George J. Burger, re-elected president of National Tire Dealers' Assn.

line filling stations, garages, hardware stores, etc., who do not stock tires and act in the full sense of the term as tire merchants. He suggests the tire manufacturer charge these dealers 5 per cent above the preferred dealer list price.

In explaining this classification Mr. Burger declared that this type of dealer usually sells tires at a very low margin of profit, thereby disorganizing the business of the legitimate tire merchants in the vicinity.

Mr. Burger's recommendations as to classifying dealers was passed in the form of a resolution, except that Class AA was changed to ready allow the dealer to handle two makes of tires, instead of one, and Class A, three or more, the other classes being eliminated.

M. P. McNair, of the Harvard University Business School, explained to the dealers the survey of the tire dealer's cost of doing business, which the business school conducted. He emphasized that dealers under present conditions, with cost of doing business from 24 per cent to 26 per cent, must pay more attention to the cutting of costs in all departments of their stores if they are to increase their entirely too small mar-

gin of net. The survey showed, he said, that those firms that lost money according to their figures, had plenty of gross margin, but had allowed their business costs to mount out of all proportion to this margin.

Three Classes Scheduled to Pass Out

Mr. McNair said that the tire dealer's credit losses are two or three times as great as in any other comparable line, and suggested a much more careful watching of this detail of business.

The average tire dealer's assets, too, he said, were usually considerably less than half his liabilities, which is fundamentally wrong in any business venture.

Three classes of dealers are going to pass out of the picture, Mr. McNair said, the dealer who "doesn't give a damn," the one who "never learns till it is too late," and the one who "says it can't be done." He warned against getting into any of these classes.

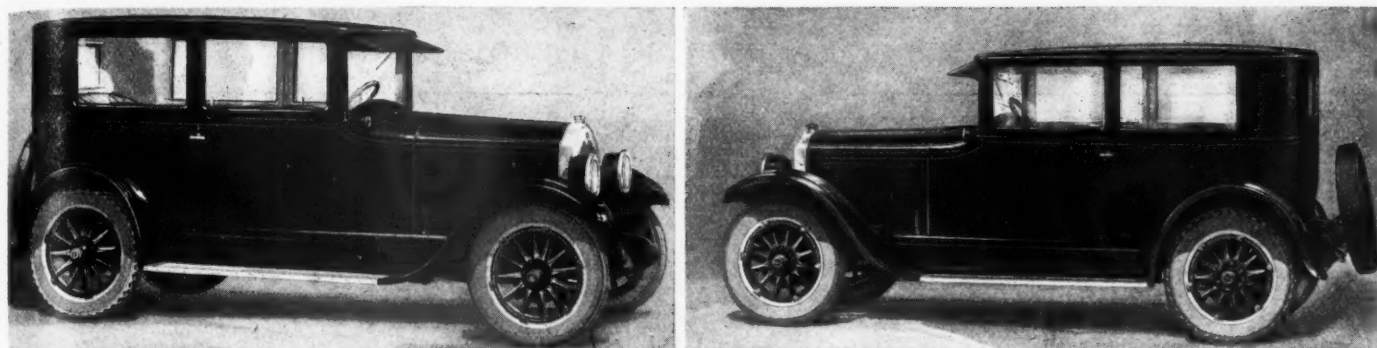
P. L. Palmerton, chief of the rubber division of the U. S. Department of Commerce, gave the association an excellent outline of present conditions in the industry. He said there is, at present, a very healthy condition in dealer tire stocks all over the country. On Oct. 1 there was an average of 53.6 balloon and high pressure casing in the stock of each dealer, and 79.9 tubes per dealer, not an excessive supply. A pertinent fact shown by his survey is that today 76 per cent of the tire dealers of the country represent but one or two lines, showing the tendency of the successful tire dealer to restriction of his lines.

Another rather pertinent fact pointed out is that only 17 per cent of the dealers reported that the sale of tires and tubes constituted the greater part of their business. They have taken on other lines and are becoming more generally merchants in automotive supplies of various sorts.

1925 to Be Good Year

Alfred Reeves, general manager of the National Automobile Chamber of Commerce told the delegates that his organization did not look for any astonishing gain in business during the next two months, but that they did feel that 1925 would be a good business year, though not as abnormally good year. He thought the industry would turn out in 1925 between three and one-half and four million cars.

A determined effort will be made during the ensuing year to double the membership of the National association, and dues may perhaps be raised that the organization will have enough money to use in accomplishing really constructive work for its members.



At the left is shown the Buick Standard coach, while at the right is shown the Buick Master coach, they sell respectively, for \$1295 and \$1495

Buick Adds Two Coach Bodies to Line

BUICK has added two new coaches to its line of Standard and Master Six models. Both models are equipped with artillery type wood wheels and have a gear reduction in the rear axle of 4.9 to 1 for the Standard model and 4.7 to 1 for the Master coach.

One of the features of the coaches is the wide door, which makes it possible for one to enter and leave the rear compartment without disturbing the occupants of the front seats. The coach bodies are equipped with a one-piece

lighted by a concealed instrument lamp recessed in the shroud.

The Buick coaches are equipped with rear vision mirror, automatic windshield wiper, dome lamp, rear window shade, and foot rest for occupants of the rear seat. The regular tool equipment and spare rim are furnished.

The Master coach is finished in Duco cobalt blue with ivory white striping. The upper part of the body is black with a wide black molding separating the upper part and body proper. This mold-

ing also extends across the shroud just below the top of the side panels and along the side of the hood to the nickel-plated radiator. The wheels are cobalt blue with white stripe.

The finish of the Standard coach is Duco Brewster green with Zuni red striping carried out in much the same manner as the color combination of the Master coach.

The price of the Master coach and Standard coach is \$1495 and \$1295 respectively.

Republic Drive Shaft Brake Improved

THE Republic truck drive shaft brake is said to stop the truck within its own length at maximum governed speed. It is simple in construction and the brake shoes can be relined within 30 min. and adjusted in less than 5 min., it is stated.

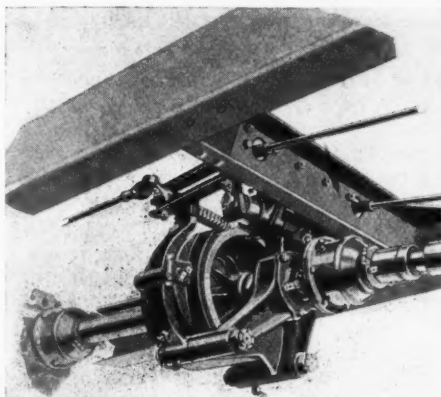
The illustration shows quite clearly the heavy, rigid mounting which holds the brake drum and drive shafts in position under severe strains. Two sturdy brake shoes are used to apply the braking power to a large drum which is mounted on the drive shaft in front of the center frame cross member. Brake shoes and

rigging are securely attached to the frame by heavy supports which prevent distortion under severe conditions.

The brake lining consists of two segments of unusual width. The use of two segments instead of a single strip of brake lining permits the application of the lining to the shoe more easily, insuring a good fit, and gives a better contact. At the same time it eliminates excessive heating when the brakes are applied for a long period.

KOUPET CALIFORNIA TOPS

Announcement is being made by the Koupet Auto Top Co., Belleville, Ill., on its new models of Koupet California Tops for Ford roadster and touring cars with slanting windshields. Improvement of design, appearance and quality have been embodied in these new models and they are finished in black long grain high grade leatherette, and installation has been simplified and can be easily accomplished, as printed illustrated instructions are furnished. Essential features are ample ventilation and clear vision. A commercial box attached to Ford roadster with Koupet top makes good equipment for delivery or salesmen, it is stated.



This shows the general layout of the new brake on the Republic truck



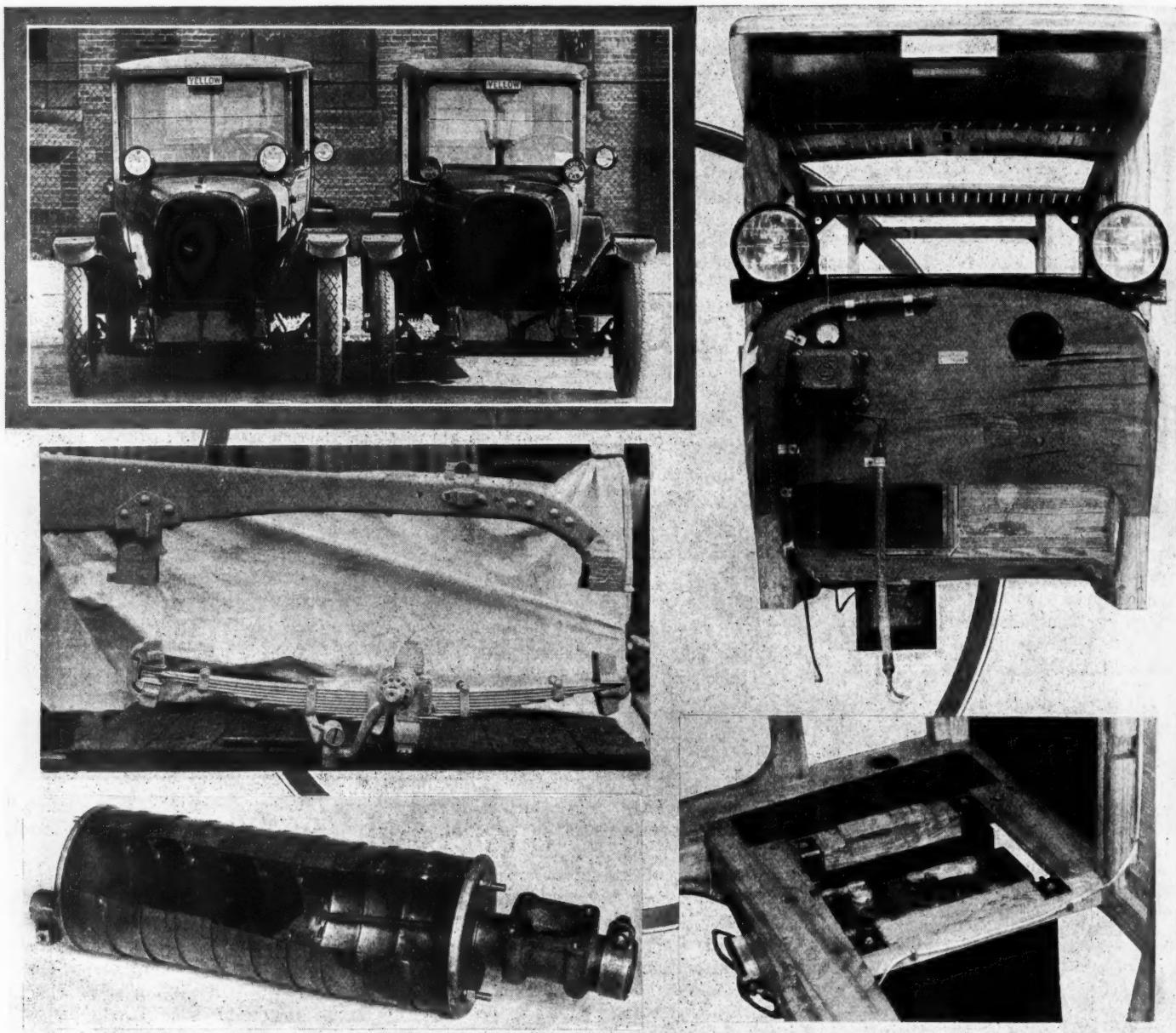
The seating arrangement of the Buick coaches is such that the rear passengers can enter or leave without disturbing those in the front seats

windshield which has been used for some time on other Buick models.

All interior hardware is heavily nickel-plated. The doors have cold drawn manganese steel hinges, and an invisible door stop. The inside handle of the door lock is of the rotary type. The left door can be latched on the inside, and the right door has an outside lock.

The instruments are of special shape to harmonize with the body design and are neatly grouped in the center of the instrument panel. They are indirectly

Details of Yellow Cab Improvements



LEFT, from top to bottom: Front view of the 5 pass. Model 04 and the 4-pass. Model A-2 Yellow Cabs; installation of front spring showing shock insulators; the muffler used is of a type which can be easily taken apart when cleaning is necessary. **RIGHT:** The control box for the electrical system is provided with an ammeter. It is under the hood where the driver will not bother about its readings, but is easily observed by the shop electrician who checks up the cabs when they are not in use. Battery leads are burned to the terminals to reduce likelihood of trouble from corrosion. A junction block on the frame is used for both the live and the ground lead

TAXICABS are the best known vehicles of the Y. C. line. These have been improved from time to time, the two standard models now in production representing the development of many years.

Standardization and sturdiness might be given as the keynote of their design. The advantage or disadvantage of some contemplated change is never considered from the standpoint of initial cost or the effect it will have on the necessary selling price, but data is obtained to show what that particular change will mean in the operating cost over the life of the car, and if an initial increase in

cost of \$100 will result in a net increase in profit of from \$500 to \$1,000 over the life of the car, then that change is incorporated.

In the operation of a taxicab business there is always the danger of a cab being damaged in a collision and if the body should be affected it means in many cases an expensive repair. This expense in operation is reduced to a minimum by the practice employed in constructing Yellow taxicab bodies of making parts interchangeable. The top and sides of the bodies are built up on forms so that one top will replace another or a whole side can be replaced. In fact, each wood part

of the body is made to pattern and any piece of wood may be ordered, and replaced by a local wood worker.

Reduced Operating Cost Is Aim

A large open space is included in the wood framework of the top over the passengers' compartment and when the cab is finished this is covered with fabric only. This means that the person riding in the rear compartment, if thrown upward is not likely to strike his head on any wooden part, but on fabric only, so that while a hat might be smashed there is not much danger of personal injury.

(Continued on next page)

Uppercu Coach Has Front-Wheel Drive

A RATHER novel bus construction has been realized in the chassis of the Uppercu Coach designed and built by the Aeromarine Plane and Engine Co. of Keyport, N. J. This vehicle combines an easily detached tractor comprising a complete power plant, front wheel driving mechanism, braking system and the equivalent of a front axle, with a trailer and body having an exceptionally low floor, yet there is nothing in the external appearance of the complete vehicle to suggest a separable arrangement.

Speaking in the ordinary sense, the tractor and the trailer units have no axles and the substitutes for these units in combination with the front wheel driving mechanism and a novel steering system constitute what unquestionably is one of the most interesting developments from an engineering standpoint which has been brought to light in the bus field for several years.

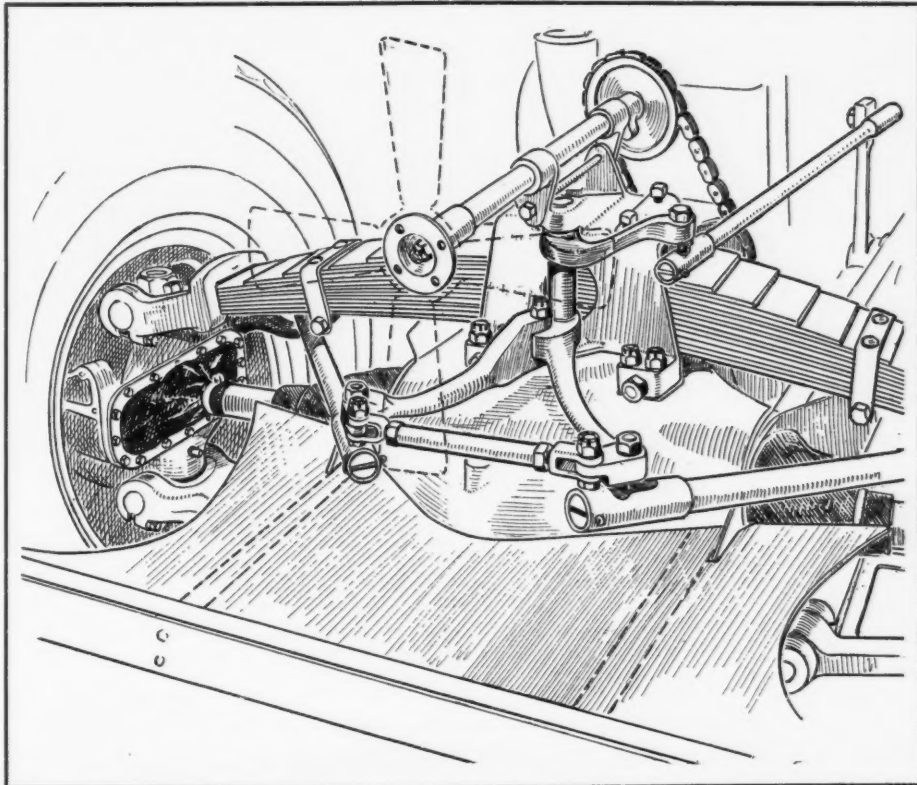
Avoid Use of Kickup at Rear

Absence of the ordinary rear axle and of all driving mechanism under the floor of the vehicle permits the use not only of an exceptionally low frame and floor, but makes it possible to avoid the use of a kickup at the rear. Floor boards are only 19 in. from the ground, and the side channels of the frame are 9 in. deep and absolutely straight, yet there is a ground clearance of 9 in. This design affords not only greater stability and safety, but permits of lower overall height of body and makes for better appearance. In double-deck construction, the upper deck is much lower than appears to be possible with a kicked up frame. The straight frame also renders body construction less expensive and

helps to strengthen the body structure.

In this design the main frame ends at the dash and there is fastened to the

of shearing stress by a horizontal flat joint between two manganese bronze castings, one of which is riveted to the



View showing front end of Uppercu tractor unit and single transverse spring, which supports whole forward portion of complete vehicle, universals and worm gear case forming part of front wheel drive, part of hinged radius brackets attached to lower part of knuckle and parts of the novel steering system

main cross member of the tractor unit by two heavy bolts which are relieved

main frame, the other being a part of the girder cross member.

New Taxicabs Added to Y. C. Line

(Continued from preceding page)

In the construction of a chassis the idea of reducing operating cost has been the basis on which each detail was determined. In the case of an accident for example where a frame might be bent or broken, an inexpensive repair might depend on the facility with which the parts could be welded. Keeping this fact in mind the frame has been made of quarter inch carbon steel instead of being made of material less easily welded. The muffler is of a type which can readily be taken apart when cleaning is necessary.

The engine in the four-passenger Model A-2 cab, the newest model is a Continental, built to the specifications of the Yellow Cab Mfg. Co. It is a four-cylinder $3\frac{1}{2} \times 5$.

Rubber shock insulators instead of the conventional type of spring shackles are employed to mount the springs on the chassis frame. In assembling these shock insulators the rubber is compressed around the end of the spring and is retained in this position. The end

of the spring is therefore not merely supported by rubber, but is actually floating in a mass of compressed rubber.

Investigation of the number of passengers carried by cabs in the larger cities shows that on the average the load is 1.7 passengers. This indicates that in the large cities a four-passenger cab can be used and operated more economically than a five-passenger cab which must be necessarily of heavier construction. Yellow cabs are accordingly made in two models, the A-2, four-passenger cab and the O-4 five-passenger cab.

In the O-4 cab the bore of the engine is $3\frac{3}{4}$ in. instead of $3\frac{1}{2}$ in. and the axle, propeller shaft and springs are slightly heavier. A somewhat larger radiator is used.

North East generator and starting system is supplied as optional equipment, the control box with ammeter being under the hood. This installation makes inspection easy for the shop superintendent.

The company has developed an open

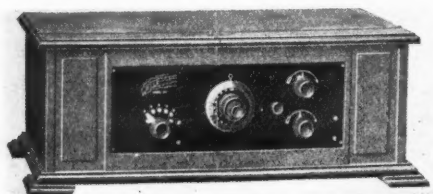
model taxicab especially for use in South American cities such as Buenos Aires, although it is of course adaptable to use in any country where the left hand driving rule applies and where moderate weather is experienced for a major portion of the year. Except for the change from left hand to right hand drive this car has practically the same chassis as the Model O-4, as used in the large American cities.

While designed primarily as an open cab it is nevertheless easily convertible to a closed cab. The detachable top fits on the regular open body and the rear door is removed and another door used in its place. This door is full height and makes a better appearing and better operating proposition than would be possible with a single door. In conformity with the demands of the patrons in the South American cities, the spare seats in the rear compartment face forward while those in the conventional cabs used in North America face the other way.

New Motor Car Accessories Are Made of Good Material

*Manufacturers Turn Out Products Designed to Serve a Utilitarian Purpose.
Equipment on Display at Big A. E. A. Show in
Chicago Meets Definite Needs*

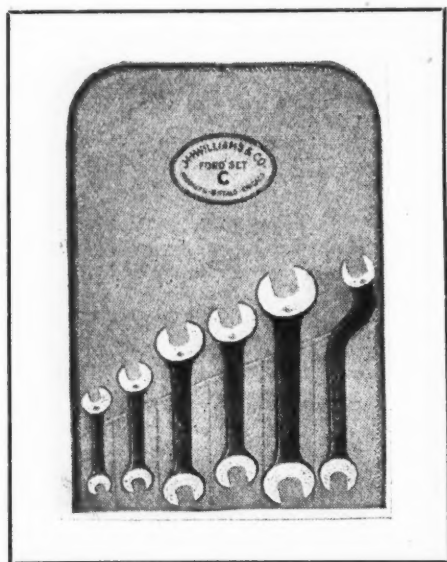
THE Wells Model 24 radio is a four-tube dry cell receiver of the radio frequency type. The set has four tubes employing one stage of radio frequency, detector, and two stages of audio frequency. The tuning is controlled by one dial. Put up in black walnut cabinet in which ample space is provided for all batteries. It is made by the Wells Mfg. Co., Fond du Lac, Wis., and sells for \$70.



Williams Superior Wrench Set For Ford Cars

J. H. Williams Co., Buffalo, N. Y., displayed a new set consisting of six wrenches which will handle every nut on the Ford chassis. The thin offset wrench is especially designed for adjusting reverse gear and transmission brake bands. The price for the set semi-finished is \$4.56 to \$7.80; price for full finish set is \$6.90; price of roll, 90 cents extra.

Williams Tappet Wrenches, priced at \$7.80 to \$18.40 are furnished in alloy steel. Two wrenches of each size are supplied with each wrench set. They



MOTOR AGE presents this week descriptions of additional products on display at the big A. E. A. show held in Chicago recently and not described in the issue of November 20, due to space limitations. The descriptions this week do not cover all of the new products which were shown at the Coliseum in Chicago, but others will appear in next week's issue

are furnished in either regular semi-finished or nickel finished condition. Set No. 3 contains six wrenches and is priced semi-finished \$7.80, nickel finished \$12.80.

Set No. 54 consists of eight wrenches and covers every size S. A. E. nut and cap screw from 1/4 in. to 1 1/8 in. inclusive. Semi-finished, \$11.20; nickel finished, \$18.40. Similar sets made up from carbon steel are furnished at slightly lower prices.

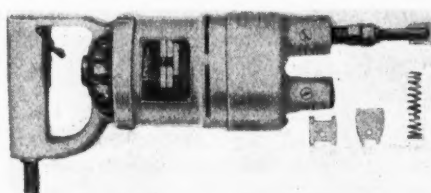
Sparton S. O. S. Horn

The Sparks-Withington Co., Jackson, Mich., offer for \$19.50 a precision built vibrator type horn. No oiling is required and the construction permits a permanent adjustment. Many internal parts are machined all over. To prolong life of vibrator points they are fitted with a condenser.



Temco Electric Valve Grinder

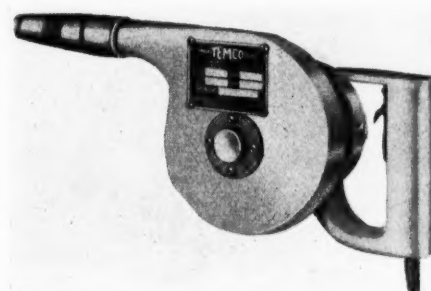
This is a light weight valve grinder complete with detachable bits, made by The Temco Electric Motor Co., Leipsic, Ohio. It has oscillating movement and is equipped with a fan cooled universal



Light weight valve grinder

motor mounted on ball bearings. Comes complete with three detachable bits and valve lift spring. Net weight complete is seven lbs. The grinder may be secured wound for any voltage from 32 to 250 volts. The price is \$34.

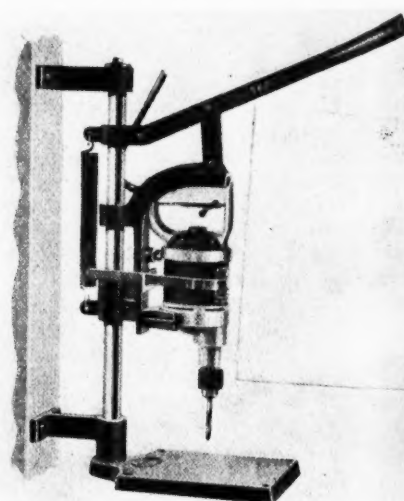
The Temco Junior Drilling Stand, price \$12, takes model D and H drills. Adjustable adapter is part of the regular equip-



Temco electric blower

ment and each stand is furnished with a bracket for mounting on posts or side walls. Device allows vertical movement of 7 in. The base measures 7 in. by 8 1/2 in.

The Temco Electric Blower, price \$30, is designed especially to clean inaccessible



Junior drilling stand

sible parts of the automobile chassis. It delivers a stream of dry unheated air. Comes complete with nose, rubber nose protector, an 8-ft. cable and plug.

Safety Factor in Making Accessories

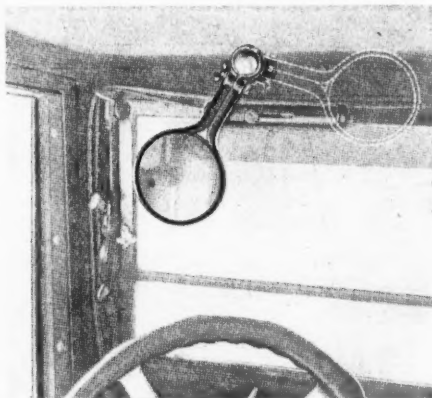
Equipped with universal fan-cooled motor mounted on ball bearings. Wound for any voltage from 32 to 250 volts.

Model D $\frac{1}{4}$ in. Electric Drill, price \$28, is similar in construction to the other model electric drills made by this company.

The Bench Clamp, Arbor and Wheel, made by this concern and priced at \$3, comprises the Temco bench clamp which takes the $\frac{1}{4}$ -in. model D drill and a grinding wheel and arbor. By fitting the drill chuck with arbor and grinding wheel the outfit can be used for sharpening drill bits, small tools and for general light grinding work. The arbor accommodates a grinding wheel of 3 in. diameter with a $\frac{1}{4}$ in. face.

Night Hawk Glare Shield

The Night Hawk Glare Shield is constructed of a novel type of glass and acts both as a glare protector and also as a rear view mirror. On display, the glare shield was mounted on a windshield as it would be on a car, and those who would could sit behind it and see how it operated. First a beam of light from a spotlight would be directed at the one investigating. There was no question about the discomfort it occasioned. Then the



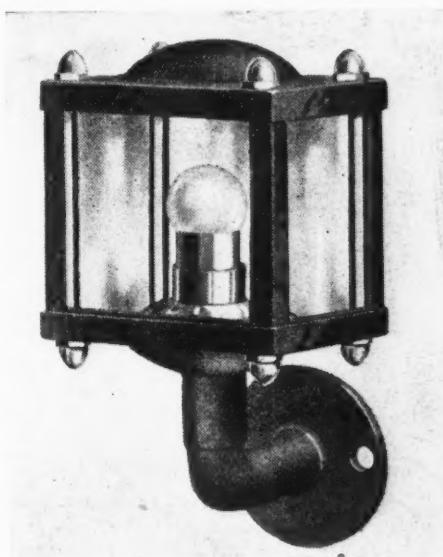
glare shield would be pulled down so as to shield the eyes of the driver. The opposing spotlight could still be seen, but dimly through the shield. With the light turned off, the shield acted as a very good mirror, to enable the driver to see what was coming behind him. The device is furnished in either black or nickel and for either open or closed cars. It sells for \$4.40 and is made by the Gemco Mfg. Co., Milwaukee, Wis.

Square Side Lamps For Closed Cars

The K. D. Lamp Co., Cincinnati, O., is featuring a new type of side lamp adaptable for use on closed cars. It incorporates a special hollow bracket through which the wires pass, with plate which is fastened to the frame of car with two screws. The body is formed from heavy sage metal and the inside lining is highly polished and plated. The lamp is finished in black enamel with nickel trimming. The bulb used is a two candle power, 6-8

volts, single contact, the lamps are being made for single circuit wiring only. The price for black and nickel finish is \$8 per pair.

The stoplight made by this concern which is known as No. 200 is now supplied with a circular bracket for attaching to the conventional tail lamp and is



also supplied with brackets which adapt it for fender installation. The model 201 is similar except that the bracket is especially designed for use on a Ford car, the same bolt or bolts which attach the Ford tail lamp also holding the spot light bracket. The price on either model is \$2.25.

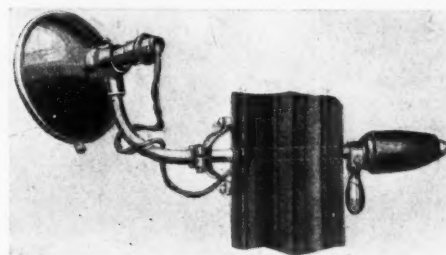
Brake Lever Extension

Rollaway Motor Co., Toledo, Ohio, offers a brake lever extension for installation on Ford and Essex six cars. The extension has a spade grip which



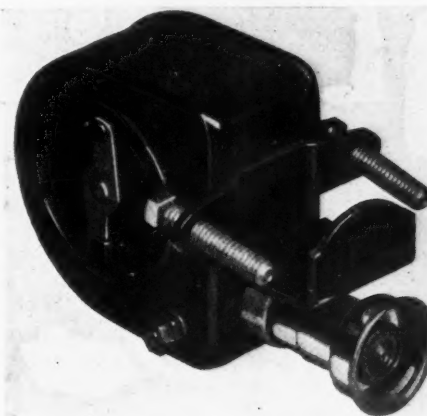
clamps over top of regular brake lever and is held by two bolts. Made of heavy enameled steel with handle of polished aluminum. The price is \$2.50.

The company also makes a swivel mounted spotlight which permits rotation in any direction is offered by the Rollaway Motor Co., Toledo, O. Can be attached to open or closed model cars. The lamp unit is of standard construction using double coated parabolic reflector. The price is \$8.50 and it is known as the Romo spotlight.



Cuno Electric Match

Installation of the cigar lighter made by the Cuno Engineering Co., Meriden, Conn., has been made very simple by the construction employed. Instead of cutting holes in the instrument board, the device is mounted just under the board, the housing which holds the cord being behind the instrument board. Two clamp screws hold it on, these being tightened either by a screw driver or a small wrench. A five-foot cord is used and the



cord is withdrawn from the holder as the lighter is used, and is automatically reeled in as the lighter is returned to its socket.

Another model is operated and installed in the same way, but it has a ten-foot cord, so that it may be used as an inspection light fixture. The lamp for this purpose is carried on a bracket which may be mounted in behind the instrument board. When needed this lamp is snapped out of its bracket, the cigar lighting fixture is disconnected and the lamp slipped into the socket instead. Then a trouble light is available which can be used at any point around the car. An extra bracket is also available so that

Wide Variety of Equipment Displayed at Chicago

the lamp may be used as a spotlight if desired.

The price of the cigar lighter is \$3; the larger model with spot and inspection light sells for \$8.

Pedrick Oil Control Ring

A new Pedrick piston ring, made by the Wilkening Mfg. Co., Philadelphia, designed to control the oil properly, is being featured at the exhibit of that concern. This ring has the upper edge beveled, where it makes contact with the cylinder wall, so that the ring will slide over the oil film on the upward stroke, while on the downward stroke the lower edge will scrape oil from the cylinder wall. The ring is also constructed with slots which permit oil to be fed to the back of the ring groove, where holes



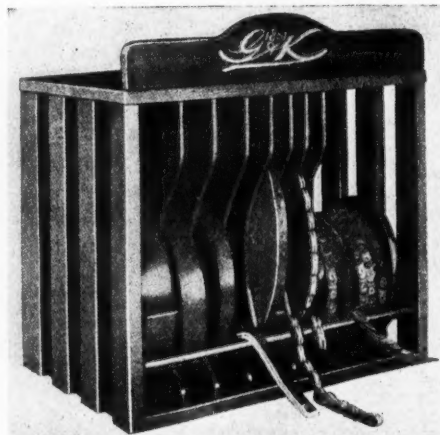
through the piston permit the excess oil to drop back into the crankcase.

The process in making the ring is the same as in the other rings, each one being individually cast, then finished to size, then cut and expanded, a heat treatment being used at the same time to give the ring the same outward wall pressure at all points. The price of oil control rings is the same as the other rings of the same size. Prices are as follows: Ford and Chevrolet, 25 cents; 2-in. to 3 1/8-in., 30 cents; 4-in. to 4 7/8-in., 35 cents; 5-in. to 5 1/2-in., 50 cents.

Cabinets for Belting Assortments

Assortments of belting to suit the needs of various sized shops is available from the Gratton & Knight Mfg. Co., Worcester, Mass., the assortments being put up in cabinets in which the stock can be well kept, and each size belting can be kept track of. The assortments include flat fan belting of various widths which can be used in making up odd

sized belts. It also includes V belting, laminated belting and a variety of endless belts, so that service may be rendered on all passenger cars and also



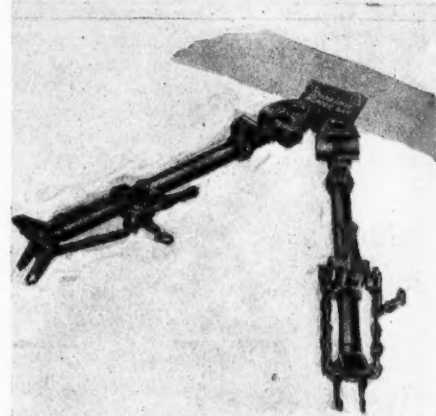
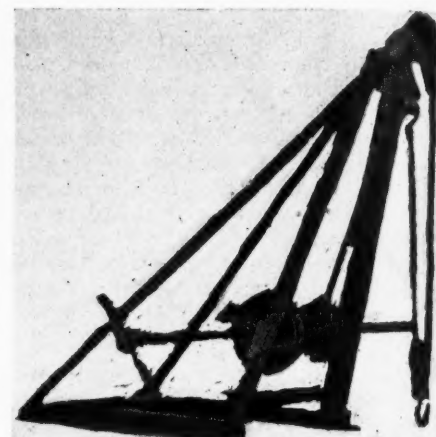
on many trucks. Prices: Assortment with cabinet at list prices of \$220, \$185, \$155 and \$70.

Wood-Imes Crane and Bumper Bar

A planetary gear made from two heavy gears entirely enclosed offering great leverage is used in the Wood-Imes Heavy Duty Crane, made by the Wood-Imes Mfg. Co., Minneapolis, Minn. A 15-in. crank on the end of the shaft gives a leverage ratio of 174 to 1. Approximately 12 teeth are constantly in mesh rather than one tooth and consequently there is little danger of dropping the load. The 1 1/2-in. steel shaft of the winch revolves on full floating heavy roller bearings housed in self-aligning races. The boom is hinged at the base and is adjustable to several different heights affording any desirable degree of overhanging. The super-structure including the boom is of steel, and the swivel head is full universal and permits grasping the load from any angle. The crane is easily operated from the ground and from either side of the service car. A knob adjustment on the drum permits of rapid spooling or unspooling of the chain and saves the operator both time and tiresome work. A positive spring lock on the drum prohibits the load from slipping or dropping when being raised or towed and is a safety factor against impact shock. The crane is equipped with 25 ft. of chain and its estimated lifting capacity is 6000 lbs. It is enameled in a bright red color. The price of the crane is \$95.

With the Wood-Imes bumper bar the driver of the service car has control at all times over both cars, as this bar prevents the towed car from bumping into the service car. Both cars travel as a unit and track positive alignment. The arms are instantly removable so they can be carried in the service car. The locking plate is permanently fastened to the service car and the arms are inserted from the plate in a vertical position. Each arm is composed of two steel pipes, one

telescope inside the other and a simple and quick acting lock affords a positive hind it to absorb shock and give flexibility to the chain grip latch lock that hold at any adjusted length. The terminal fork has a heavy compression spring be-



is used to tighten the chain after making the fastening to a disabled car. It sells for \$20.

Trico Windshield Cleaner

A full automatic type of vacuum windshield cleaner is made by the Trico Products Corp., Buffalo, N. Y. Automatic speed regulation is secured by a vacuum regulating valve located on the instrument board. This valve which is manually adjusted holds the vacuum depression to any desired value throughout the full throttle range of the engine. The price is \$7.50.

Nu-Back Automotive Preparations

Nu-Back Mfg. Co., St. Louis, Mo., announced three new additions to the line of automotive chemical preparations as follows:

Nu-Back new auto polish, a body polish put up in cans of a capacity of from one-half pint to one gallon. Nickel Brite a permanent lacquer for nickel and brass parts of the automobile. Nu-Back neat foot clutch and brake compound for softening leather and asbestos woven facings. The two last named products are furnished in containers of the same capacity as listed for the NU auto polish.

These Attracted Attention at A. E. A. Show

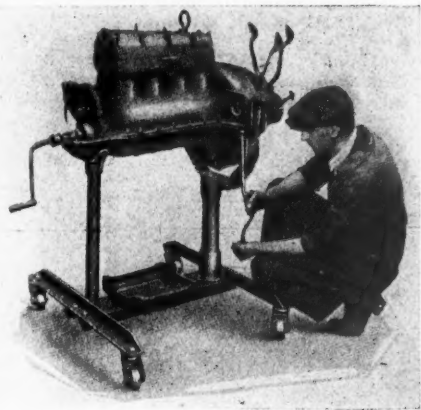


Box for Spare Lamp Bulbs

In addition to the lamp bulb box which has been supplied by the Westinghouse Lamp Co., New York, for some time, there is now available another one, suitable for three bulbs. The box is made of tin and contains a cardboard holder which keeps the bulbs in place in the box. It is designed to take care of one head-lamp bulb and two small bulbs. The price is 10 cents.

Three New Weaver Products

Three new items were shown in the display of the Weaver Mfg. Co., Springfield, Ill. One of these is a brake service machine, which is available in a number of combinations. The complete machine



Assembling stand

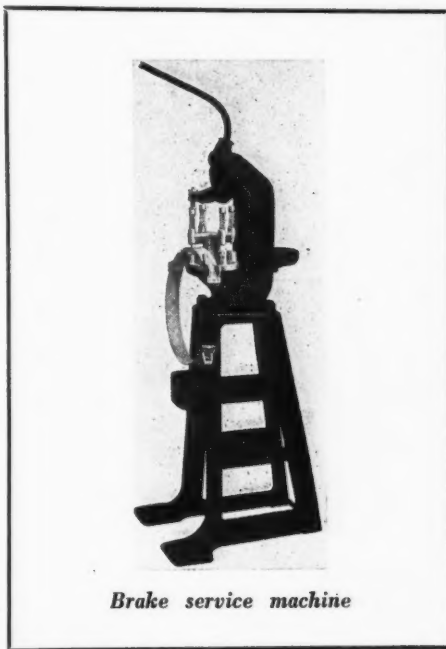
includes the base which is the same base as used on the piston and connecting rod aligning machine. It can be had with the stand for \$58, or without stand and without attachment for \$20, the special Ford machine being \$50.

The Weaver truck ambulance is designed to answer the demand for a unit which will take care of trucks, busses and commercial cars of any size. Each wheel is supported on the axle by two

sets of heavy ball-bearings which take the radial weight as well as thrust. The bearings are packed in grease while provision is made for adding additional lubricant by means of an Alemite connection and grease gun. The ambulance is equipped with heavy solid double tires,



Weaver truck ambulance



Brake service machine

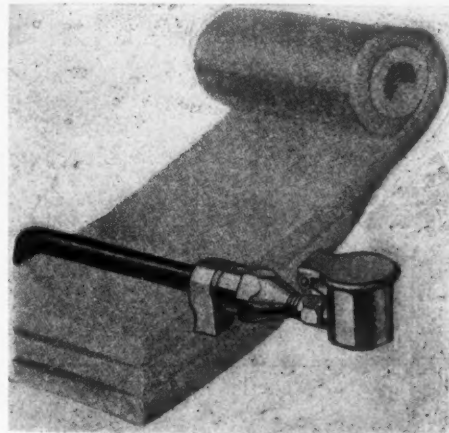
vulcanized on to a steel rim which is pressed on the wheel. The wheels are 8½ inches wide, 16 inches in diameter and the extreme width of the ambulance is 43¼ inches. Saddles which support the load are offset and can be interchanged and the width between them varies from 19¼ inches to 28¾ inches so as to avoid obstruction such as brake rods.

The assembling stand is designed for the purpose of holding the engine in a convenient position while the crankcase nuts and bolts are being removed. The engine proper can then be lifted off and taken to an engine stand.

Harvey Spring Oilers

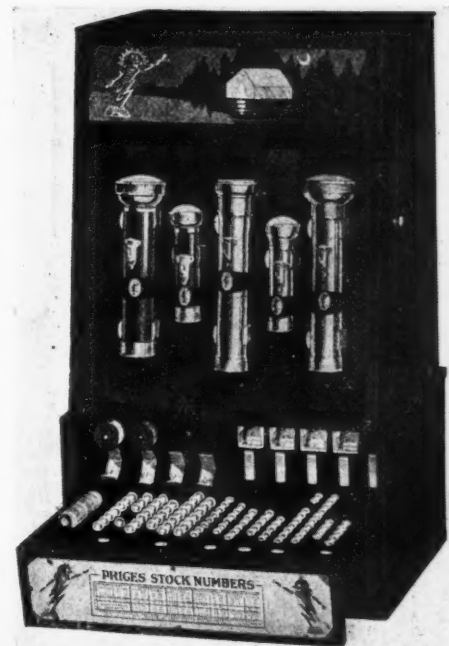
These are made by the Harvey Spring & Forging Co., Racine, Wis., price \$2.25

per set of four. They are installed by attaching to the top leaf of the springs near the eye end. Oil is conducted from the cup through the hollow bolt to a port cut in the wedge fitting from which it enters between the leaves. The company have also added a new line known as Harvey Spring Oil designed for use with the spring oiler. The price of the oil in a special pint can equipped with spout is 75 cents.

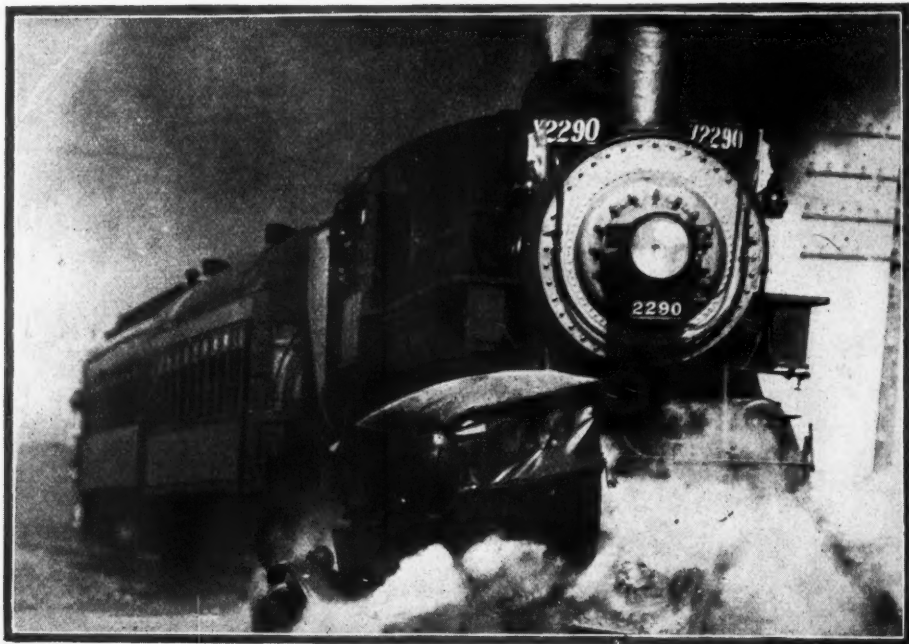


Ray-O-Light Saleswinner Cabinet for Flashlight Display

To facilitate easy sales of flashlights, bulbs and batteries, the French Battery and Carbon Co., Madison, Wis., is furnishing to its dealers a cabinet which displays these goods to advantage. The front of the cabinet includes a display case in which the flashlights show up to advantage while the inner portion has space for stock. In the lower part bulbs are carried, a convenient test for either a battery or bulb also being incorporated. The cabinet is furnished free with assortment of flashlights and batteries.



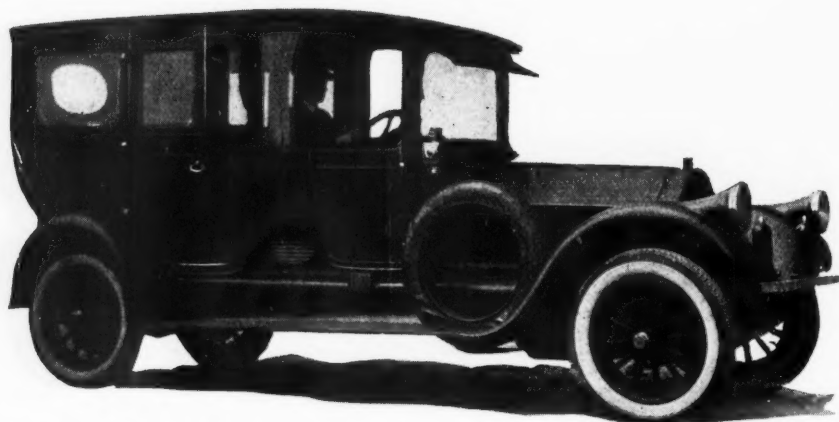
MOTOR AGE'S PICTURE PAGES



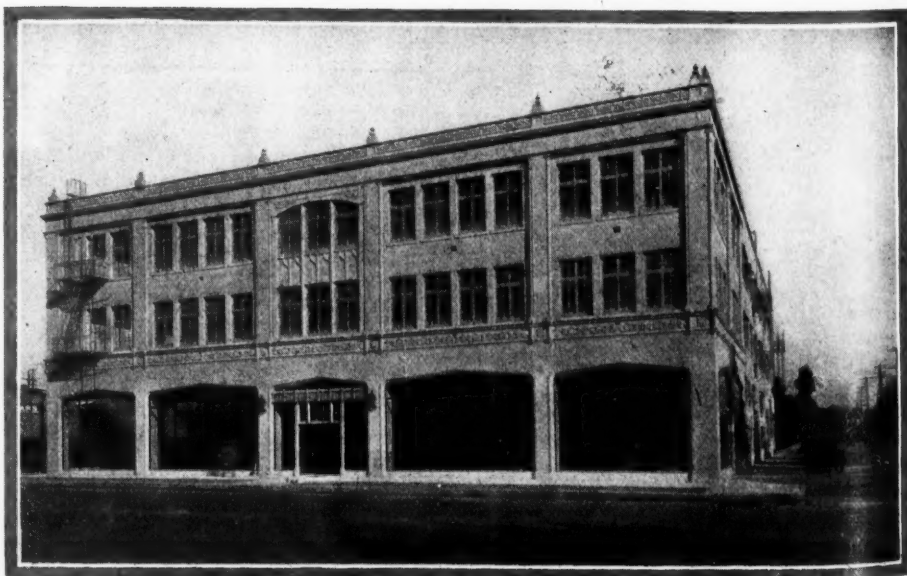
Four automobiles were wrecked when they were struck by a "train" at Florence, Cal. There was no loss of life as it was done in order that newsreel photographers might thus be able to convey to the screen, and thus to the public, the danger and folly of attempting to beat trains to railroad crossings



Realizing that life in China was likely to be one revolution after another, the foreign quarter of Shanghai sent to the U. S. for Stewart trucks and when they arrived armored bodies were placed on them with one machine gun mounted in a revolving turret and three other machine gun emplacements in the body of the truck. Trucks of two and a half ton capacity were used, to combine speed with reasonable carrying capacity and short turning radius for easy handling. Col. Johnson, shown in the picture, commanded the volunteers who manned the trucks



This limousine, built in Paris in 1906, at a cost of \$30,000, and used by several royal families of Europe, was the object of interest at the Pierce-Arrow exhibit at the Seventh Annual Automobile Show at Oakland, Cal., recently

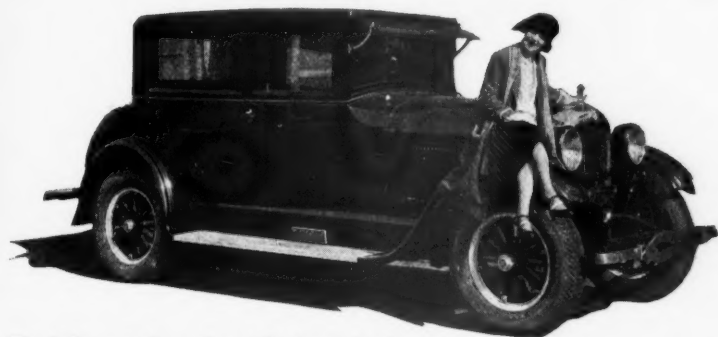


One of the largest and finest of the newer automotive dealer establishments opened in the West during the year has just been occupied by the Paige Co. of Southern California, distributors of the Paige and Jewett in the Pacific Southwest. The building, which is three stories in height, has a frontage of 120 ft. and a depth of 200 ft. There is a total of 86,000 sq. ft. of floor space

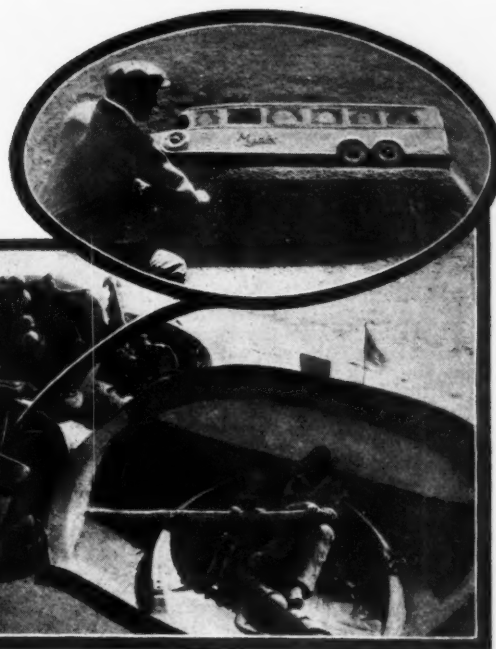
OF AUTOMOTIVE INTEREST



Al Wilson, motion picture star, hooked his toes over the front bumper of a Maxwell touring car, reached out the full length to the tire carrier of the car ahead, and, acting virtually as a human tow-rope, pulled the car along the street. The stunt was staged by the Union Motors, Inc., Los Angeles Maxwell distributors



The lady seated on the right front fender of this new Studebaker Big Six Coupe is Edna Wallace Hopper who is making a vaudeville tour with her company. When in South Bend recently she made an extended visit to the Studebaker plants and saw the new cars "behind the scenes"



Here is shown a reproduction in sand at Atlantic City of the 6-wheel Mack Greatcoach. The disk wheels and window curtains were colored red and the body a battleship gray. The reproduction caused many to visit the Mack booth at the convention of the American Electric Ry Assn. and inspect the actual bus



The products of the Gates Rubber Co. (left) and Walden-Worcester, Inc., (right) were provided with attractive settings at the A. E. A. show held in Chicago recently, with the result that the exhibits came in for their full share of attention

The READERS' CLEARING HOUSE

Questions & Answers on Dealers' Problems

NEW INDEX OF CLEARING HOUSE ARTICLES

Beginning with this issue MOTOR AGE will publish a weekly alphabetical index of the Readers' Clearing House questions and answers. The index in the current issue will cover the articles appearing in the preceding issue. Thus the index this week is for last week's issue. The index next week will be for this week's issue.

The purpose of this is to enable readers who keep a file of their copies of MOTOR AGE to quickly refer to a particular problem and answer. In the past some readers have compiled their own index by entering the subjects treated in alphabetical order in loose-leaf notebooks. The weekly printed index will greatly simplify the compiling of such complete index. Turn to the last page of the Clearing House department for the index.

A Method of Measuring Toe-In

Q.—I have been a reader of MOTOR AGE for a number of years and have been in the automobile work for about 15 years and have found your journal a great help in keeping up to date on all improvements. Enclosed find check to cover one year's subscription. I am greatly interested in you Reader's Clearing House and have found many good things there. I have one question that I run across often and have found very little reliable information on, and that is: front wheel alignment. I have seen tires ranging from 30x3 to 36x6 and at varying air pressure, all have the same trouble. I have a pair of tires of the same make and tread on wheels within a toe-in of $\frac{1}{4}$ to $\frac{3}{8}$ inch in front to wear one tire twice as fast as the other. In some cases it is the right and sometimes the left. Spindle and wheel bearings in most cases are slightly worn but not to such a state as to justify new ones. It often wears the outside of a tire faster than the inside but very seldom does the inside wear faster.

Sometimes the tire will often wear in a rough tread, that is, will develop a worn spot about every 3 inches and leave a tread between these spots about $\frac{1}{4}$ or $\frac{3}{8}$ inch higher or not worn so much. These conditions develop on hard surface road and on most any kind of car.—Charles H. Evans, Box No. 141, Lake Worth, Fla.

The following extracts are taken from the S. A. E. Journal. The article extracted is written by John S. Duby. One writer states that the front wheels to be in alignment "must be out of alignment." To an extent this statement is true, that is the front wheels, should be set so they are slightly closer at the bottom than at the top. They should also be closer together at the front than at the back and the axle must be tilted so that the bottom is farther forward than the top and the front axle should be longer than the rear axle so that the front wheels will be the same distance apart as the rear wheels at the bottom but farther apart than the rear wheels at the top.

In automobile construction even with the king pin set close to the wheels there is a slight tendency for each spindle to bend backwards as the car is being propelled forward. If the wheels were set perfectly parallel when the car was standing still they would immediately

The Readers' Clearing House

THIS department is conducted to assist dealers and maintenance station executives in the solution of their problems.

All questions are answered direct by letter, so the name and address should be given in full. This saves waiting for the answer to be published, which sometimes occurs several weeks late, depending upon the space available.

Readers' names will not be published with articles, if a request to this effect is received with the letter.

Inquiries not of general interest will be answered by personal letter only. Emergency questions will be replied to by letter or telegram.

Also state whether a permanent file of MOTOR AGE is kept, for many times inquiries of an identical nature have been made and these are answered by reference to previous issues.

Addresses of business firms will not be published in this department but will be supplied by letter.

Technical questions answered by B. M. Ikert, P. L. Dumas and A. H. Packer; Legal, by Wellington Gustin; Paint, by G. King Franklin; Architectural, by Tom Wilder; Tires, by a Practical Tire Man; General Business questions, by MOTOR AGE organization in conference.

toe out when the car would start to go forward. This toeing out would increase with the speed of the car or as the road conditions became such as to cause more resistance to the forward movement of the road wheels. Right here is one of the principal reasons for toeing-in the front wheels. This tendency to bend backwards varies with the different types of construction. Other factors have a direct bearing on the amount of toe-in. One of these is camber. The principal reason for camber is to bring the wheels into contact with the road at the point directly under the center of the king pin or as

(Continued on Page 28)

Reason for Offset Piston Pin

Q.—Since your information department has several times before been helpful to me I would like to call on you again. Please give the manufacturers reason for the off set piston pin as used in the Buick and explain the good effect obtained.—Heaberlin Brothers, East Jefferson street, Kirksville, Mo.

The Buick and a few other manufacturers set the piston pin anchorage point slightly to one side as will be seen in the diagram on page 27. The theory is that this location compensates for the reaction from the explosion stroke. The reasoning is as follows: When the piston is part way down on the power stroke all the pressure on the piston is transmitted to the connecting rod at an angle which reacts against the piston wall in proportion to the angle at that moment. Generally speaking the maximum is at 45 degrees. Figuring that a portion of this area is below the wrist pin they accordingly place the largest area on the left side, which, when the reaction from the explosion occurs, tends to shift the piston against the side thrust pressure and gives better equalized pressure. It will be seen then that the relative location of the piston pin in relation to the top and bottom of the piston has considerable to do with the effects of the off set.

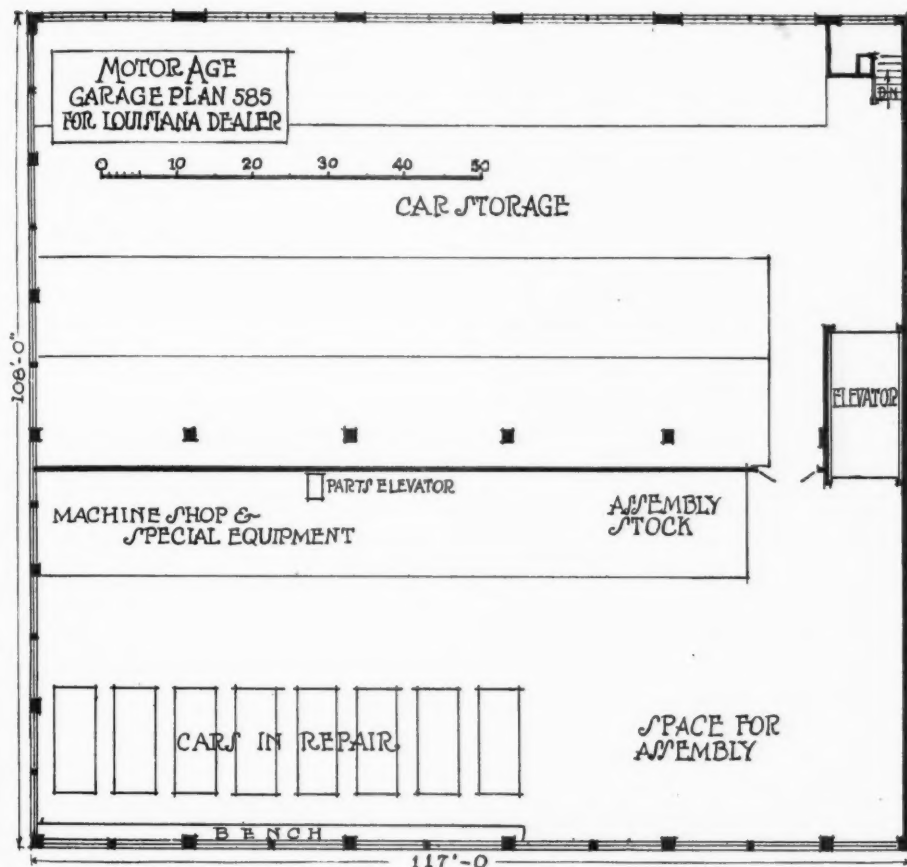
Q.—We have been thinking on a plan of establishing an exchange service on rebuilt motor, that is to sell and install a rebuilt motor and take the original motor in, rebuild it and exchange with the next man. Give your general opinion as to the success of such a plan. Also give the details to be considered as to registration laws, etc. At present we would only consider the Ford motor in such a plan.

The greatest difficulty with this plan will be in arriving at a cost for the parts required to recondition the engine taken in. We believe if you can hold the customer over long enough to disassemble the old engine and record the numbers of parts required to recondition it then the plan can be made successful. However, as the exchange proposition is designed to give quick service there may be many cases when this cannot be done. Before

(Continued on page 29)

The Readers' Clearing House

Plans for Large Ford Sales and Service Building



Q.—Being a subscriber to your magazine, kindly give me your ideas of a plan for a Ford agency building, measuring 108 feet front by 117 feet on the side street or depth. I am enclosing a rough sketch of my ideas. Said building to be two stories. If you have various plans about this size please mail me a copy or rough sketch of each one and I will remit to you for your expense. Salesmen desk and a private office to be arranged in rear of stockroom, accessible through office.—Louisiana Dealer.

We have been obliged to depart somewhat from your sketch in order to make the proportions of the spaces fit the general layout. Constructional details also have to be considered and they have made some departures.

The columns that support the second floor must necessarily be considered in laying out the first floor and those have been worked in to the best advantage considering the storage of cars and the arrangement of spaces. They have been placed twenty-one feet apart on centers so that 3 cars can be stored between them and even though you do not use the arrangement we have made the columns will no doubt answer your purpose, whatever arrangement you make.

On the second floor the partition between the shop and the car storage space has been set over slightly but this will not be necessary if the cars you handle are all Fords or any other small car, this being done to get more space in the aisle and also allow three rows of cars.

There is a small electric or hand elevator shown to convey parts from the stockroom to the repair shop. Parts in larger quantities for assembly will of course be taken up in the big elevator in the quantities necessary.

Only the space along the outside wall of your lower floor will be fit for service of any kind. All the interior portions of this floor will be dark or at least too dark for repair work unless artificial light is used and that is always undesirable.

Architectural Service

IN giving architectural advice, MOTOR AGE aims to assist its readers in their problems of planning, building and equipping, maintenance stations, garages, dealers' establishments, shops, filling stations, and in fact, any building necessary to automotive activity.

When making request for assistance, please see that we have all the data necessary to an intelligent handling of the job. Among other things, we need such information as follows:

Rough pencil sketch showing size and shape of plot and its relation to streets and alleys.

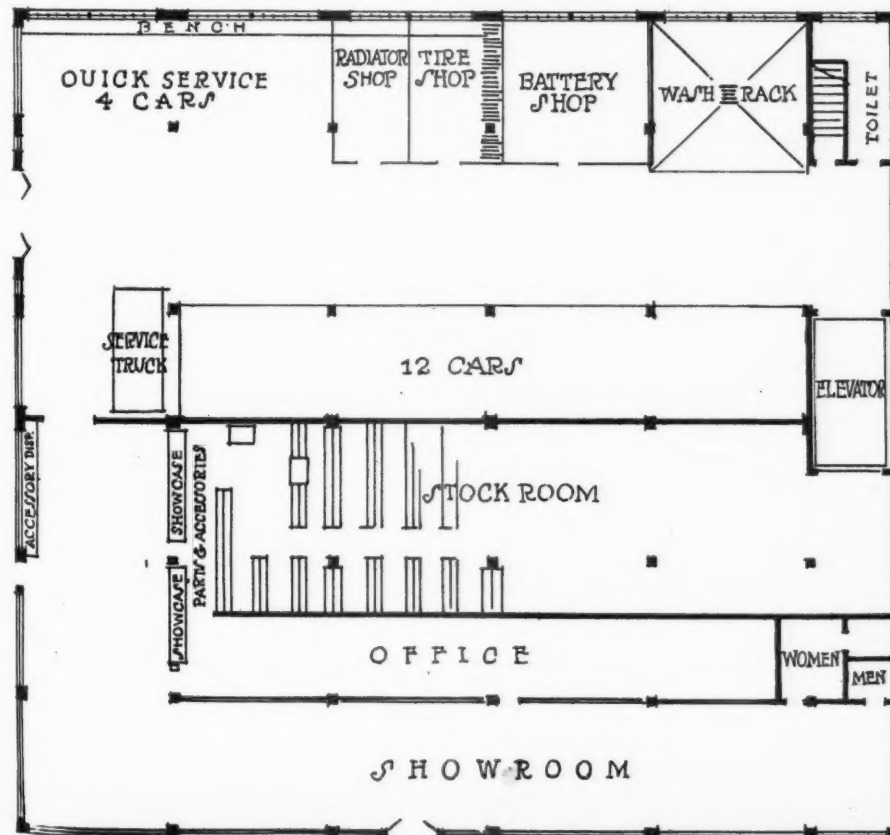
What departments are to be operated and how large it is expected to be.

Number of cars on sales floor.

Number of cars it is expected to garage.

Number of men employed in repair shop.

How much of an accessory department is anticipated.



The Readers' Clearing House

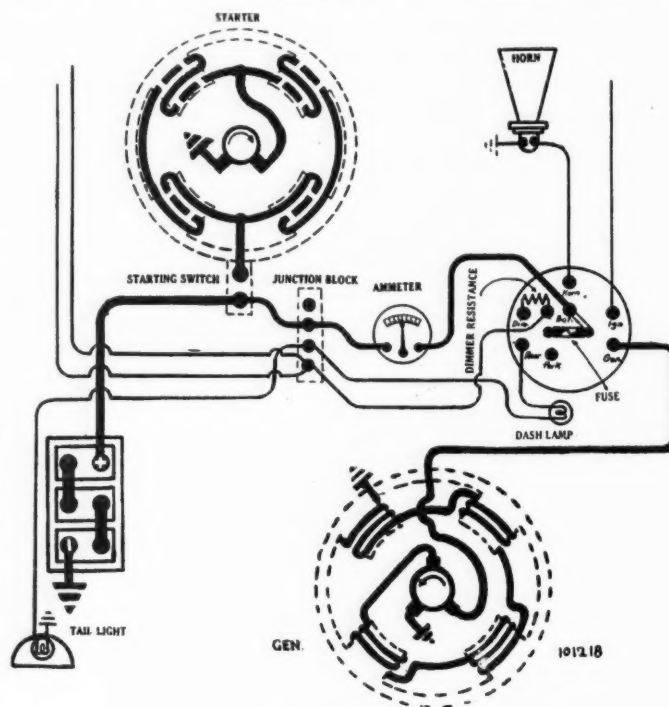
Resistance in Charging Circuit Makes Bulbs Burn Out

One of our customers, who is driving a 1924 model Essex 6 cylinder touring car, has been having a great deal of trouble, the cause of which we have not been able to determine. He has been burning out, on the average, four headlight bulbs, two or three tail and dash light bulbs, four cowl bulbs and six or eight spot light bulbs every month. The wiring seems to be o. k. and we have used the proper candle power bulbs. The peculiar thing is that he has never had to replace a fuse, the originals still being in the car.—A Michigan Service Station.

The trouble is due to high voltage and the high voltage is probably due to a poor connection somewhere between the generator and the battery. The fuses on a car are not designed to prevent the bulbs burning out. In fact the bulb is already at a white heat so that a slight increase in voltage and a slight increase in current above the normal current is sufficient to burn out the bulbs. The fuse is designed to protect the wiring rather than the bulb and in case the wire near the head lamp bulb should have its insulation rubbed off so that the wire touches the frame of the car then the fuse is designed to burn out so as to protect the wiring and keep it from getting so hot as to melt the insulation and possibly set the car on fire.

We are showing a wiring diagram of the Essex car which takes in the battery, starter, generator and circuits which affect these units. The most reliable method of testing for a condition of this sort is to have a voltmeter, but in case you do not have a voltmeter you can use a 6-volt test lamp and get an approximate idea of the voltage by observing the brightness of the lamp. If the voltmeter is available you will make a test by having the engine running and the generator charging the

battery. Then connect the voltmeter directly across the battery and you may get a reading of 6.5 volts. Then connect the voltmeter from the live generator terminal to the frame of the car. Here you may get a reading of 9 volts. If such a difference in voltage should be found it would account for the trouble your customer is having. The difference between battery voltage and voltage of the generator should not be more than .5 volts. Assuming you find a consider-



Wiring of 1924 Essex

able difference of voltage it would then be necessary to make further tests. You could make a test from the live battery terminal to the frame of the car. Then from the battery terminal of the starter switch to the frame of the car. Then you could test by keeping one voltmeter lead in contact with the frame of the car while the other voltmeter lead is connected to the live battery wire at the junction block. Then test at the ammeter, then the other ammeter terminal, then the terminal of the ignition switch

to which the ammeter is connected, then the terminal of the ignition switch, to which the generator is connected, and finally at the generator itself. If, for example, you would find a reading of 7.5 volts at one ammeter terminal and a reading of 9 volts at the other ammeter terminal it would show a high resistance in the ammeter which would account for your trouble. You therefore proceed in the manner indicated until you find a place where there is a sudden change in

the readings as shown by the voltmeter. If such a meter is not available you will have to use a test lamp and see if you find some place in the circuit where there is a sudden change in the brightness of the lamps. If you should find that with the battery fully charged as shown by a hydrometer and with the engine running and the generator charging 10 or 12 amperes that the battery voltage itself would be as much as 8.5 or 9 volts, it would apparently indicate that the separators in the battery have a high resistance and do not carry the current very well. On the other hand this would also show up by causing trouble with the starter for the starter would probably turn the engine over very slowly. This is a rather unlikely possibility, but we merely mention it as a possibility.

The most likely condition is a high resistance somewhere in the circuit.

It might possibly be in the ignition switch itself which is used as cutout, there being no conventional magnetic cutout used in this electrical system.

With trouble in the ignition switch you would find a difference in voltage or difference in brightness of the test lamp when testing at the two switch terminals which have to do with carrying the generator current going to battery.

A Method of Measuring Toe-In

(Continued from Page 26)

near as possible; this still further decreases the tendency for the spindles to bend backwards as the car is being driven forward. Thus camber would decrease greatly the necessity of toeing-in except for the fact that getting the wheels at this angle causes each wheel to act as a cone when it comes into contact with the road and the tendency of the cone is to roll around in a circle. Therefore this very cambering or the setting of the wheels together at the bottom necessitates toeing-in itself; so as the

necessity for toe-in due to camber increases the necessity for toe-in due to the spindles being bent backwards decreases. One just off-sets the other and the necessity for toe-in remains exactly the same.

Other factors affect the amount of toe-in. First, the amount of pressure required to spring the steering connections. A car with stiff spindle arms will require less toe-in than one on which the wheels can be sprung outward easily at the front. Second, the size of the wheel.

Large wheels require more toe-in than small ones. Third, the size of the section of the tire. A 32 by 4½ tire requires more toe-in than a 32 by 3½ tire. Fourth, the point at which the tests are made. If a car were tested for toe-in by taking the readings from the tire and it showed ¼ in. toe-in the same car tested from the felloes would show considerably less than ¼ in. toe-in, because the front and back readings would be taken much closer together. Further on in the article

(Continued on next page)

The Readers' Clearing House

Oil Supply Should Not Vary

Q.—Please advise if upon removing magnets and field coil from Ford motor if there will be too much oil thrown by flywheel to No. 4 cylinder?—A. L. McKinney, Seymour, Ind.

We see no reason why the No. 4 cylinder should receive more lubricant when the magnets are removed.

Q.—How many spools should be left on flywheel when magnets are removed to insure oil supply when an outside oil pipe to front of motor from magneto plug is used?

We would suggest that you use two sets of spools and that you also use them as a method of balancing the flywheel which probably would be in an out of balance condition after removal of the magnets. By removing or adding metal to the spools, it will enable you to put the flywheel in static balance without doing any machine work to the flywheel proper.

Removal of the magnets will not interfere with the proper functioning of the special oiling system that you contemplate using.

THERE ARE SEVERAL METHODS OF DRILLING PISTONS

Q.—In order to stop oil pumping in an automobile engine it is sometimes necessary to drill holes in the pistons. What can you say as to the advisability of drilling holes in new pistons when fitting them to a block after regrinding same?

It seems to us that this might be a good precaution to take against possible oil pumping and at the same time somewhat lighten the piston while not reducing the wearing surface at a vital point. If the holes were drilled in the sides below the pin bosses we think it would be a good idea.—Hugh J. Folkner, 330 N. Mulberry st., Mansfield, Ohio.

We would not recommend drilling holes in the main portion of the pistons, that is in the surface which operates against the cylinder walls. The only suitable place to drill holes is in the ring groove. One method of doing this is to drill holes around the circumference of the bottom ring groove when a special type of oil scraping ring is used. Such a ring scrapes the oil from the cylinder walls and feeds it into the space in behind the bottom ring. The holes in the ring groove then permit this oil to get inside the pistons and drain back into the crank case.

The amount of reduction in weight that you will effect by drilling extra holes in the piston would not amount to much and would weaken the piston and reduce the wearing surface.

FIRING ORDERS GIVEN

Q. What are the firing orders of the Duesenberg stock car and 122 in. race car, and also of the Packard eight?

The Duesenberg stock and racing cars have the same firing order which is 1-5-3-7-4-8-2-6. The firing order on the Packard eight is 1-3-2-5-8-6-7-4.

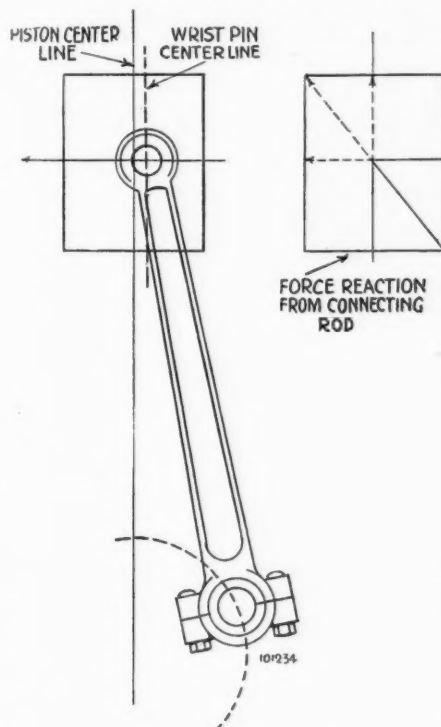
Q. What is meant by catalyzing?

A catalytic agent is a substance which by its presence either accelerates or reduces a chemical reaction. In most cases a catalytic agent acts positively and in many cases is known to form one or more intermediate compounds which decompose and leave the agent apparently unchanged.

Reason for Offset Piston Pin

(Continued from Page 26)

entering into it we would advise that you get in touch with several authorized Ford dealers asking them for the average of the parts used on at least fifteen complete overhaul jobs. If they will not give you the average get the parts sales for each one of these jobs and then arrive at the average yourself. We do not know



of any firm that is using such a plan at the present time, although there are of course several authorized truck factory branch maintenance stations that supply such service through the truck owners. Regarding the registration and so forth, as far as we know the only thing that will be required is that you transfer from the engine cylinder block taken in the engine number which will be stamped on the engine which you give in exchange. This will mean that you will require three or four engines that will be unnumbered or that can be secured from cars which have been permanently out of commission. In other words the proposition regarding registration is exactly the same as would be done in case of changing a cylinder block on a Ford engine.

VACUUM TANK CAN BE USED

Q.—Can we use a vacuum tank on a 1917 Packard twin six in place of a pressure system now used?

Yes. It should be borne in mind however, that the gasoline tank at the rear of this car is partitioned crosswise through the center for a short distance up from the bottom. This arrangement divides the bottom of the tank into two compartments, thus automatically providing a reserve supply of about three gallons on the side of the tank. A three way valve located on the top of the gasoline tank connects with outlet pipes leading to both sides of the tank. It should be borne in mind that when the valve handle is turned to the left the engine is running on the reserve supply or in other words when the handle is turned to the left it enables the first compartment to be drained. It will be necessary to insert a stand pipe in the tank connecting it to both tank compartments and with one of the gasoline lines now installed.

2.—What size tank would you advise being used?

We would suggest the use of a large sized tank, the same as used on the Mercer and Duesenberg stock cars.

3.—What mileage should we get on this car under normal conditions?—Citizens Auto Co., Quitman, Ga.

We cannot give you a definite answer.

A Method of Measuring Toe-In

(Continued from Page 26)

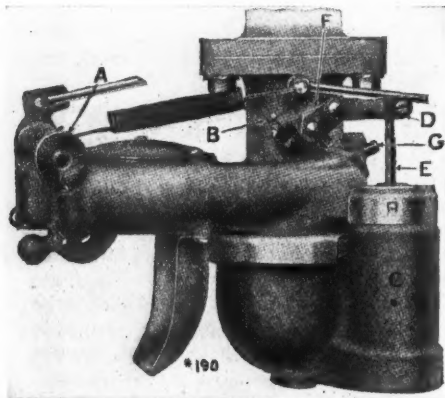
Duby states that he has a quick method of eliminating all confusion present regarding wheel alignment and it is not even necessary to use a chart showing the amount of toe-in required on different cars. The method which will be mentioned presently takes care of all varying conditions and treats all cars alike and yet actually gives to each different type the correct amount of toe-in without any special allowance. The measurements from wheel to wheel for toe-in should be taken from the tire at the front, 9 inches from the floor. The car should be moved forward far enough so that the second reading can be taken from the same identical part of the tire 9 inches from the floor at the back. This eliminates any possible chance of getting an in-accurate reading due to a lump on the tire, crooked rim or crooked wheel. With this method it is recommended that previous to making measurements that you press outward on the front of the front wheels and then let go of them and allow them to go back as nearly to their normal place as the construction of the tires will permit, then take the reading from wheel to wheel on the tires 9 inches from the floor as before stated. In other words the wheel should be toed-out as much as possible by pressing against the wheels from the inside previous to taking the reading.

The Readers' Clearing House

Timing and Carbureter Data on Cadillac

Q.—In regard to your instructions of adjusting Cadillac carbureters and ignition timing in the January 24th issue of *MOTOR AGE*. Does not same timing take care of the O-59 model Cadillac and if not could you give me the proper timing of the motor and instructions on this carbureter.—A. C. Stanley, care Standish Motor Sales Company, Larned, Kansas.

Before making any carbureter adjustments be sure that the points on the spark plugs are .028 inches apart and that the spark plug cores are clean and that the timer is properly set, and that the timer contact points are clean and in proper adjustment. In fact see if the entire ignition system is in good working order. Adjustment of the carbureter is as follows: Open the throttle about 2 inches on the sector at the steering wheel. Place the spark lever in the "driving range" on the sector and start the engine. If the engine is cranked by hand the spark lever should be placed at the extreme left on this engine. Run the engine until the water jacket on the intake pipe is hot. Now move the spark lever to the extreme left on the sector and throttle lever to a position which leaves the throttle in the carbureter slightly open. Adjust the air screw A at Fig. 190 to the point which produces the highest engine speed. Turning the screw A in a clockwise direction increases the proportion of gasoline to air in the mixture and vice versa. Close the throttle



by moving it to the extreme left on the sector and adjust the throttle stop screw B to a point which causes the engine to run at a speed of about 300 revolutions per minute. The spark lever should be at the extreme left on the sector when this adjustment is made. When the spark and throttle levers are at the extreme left on the sector adjust the air valve screw A to a point which produces highest engine speed. Open the throttle until the shutter attached to the right hand end of the throttle shaft just covers the slot in the carbureter body. Then adjust the screw G to a point which produces the highest engine speed or to a point where

the engine slows down slightly from the lean mixture. Turning the screw G in a clock-wise direction increase the proportion of gasoline to air in the mixture and vice versa.

Leaning Device

The model O-59 Cadillac is equipped with a gas saver or leaning device which functions at ordinary driving speed but is not in operation at closed or nearly closed position of the throttle or at open or nearly open position. Adjustment of the leaning device is made at G. When G is screwed in as far as it will go the leaning has no influence on the mixture at any throttle position. The leaning device consists of a shutter attached to the right hand end of the throttle shaft which covers a slot in the carbureter body when the throttle is opened slightly, again uncovering the slot when the throttle is opened wide or nearly so. A hole is drilled through the carbureter body from the mixing chamber to the slot and another hole is drilled from the carbureter hole to the slot. It will be seen then that when the slot is covered by the shutter a passage is formed from the mixing chamber to the carbureter bowl. The partial vacuum from the mixing chamber causes a lowering of the atmospheric pressure in the carbureter bowl resulting in less gasoline being fed to the spray nozzle. When the shutter uncovers the slot the partial vacuum from the mixing chamber fed to the spray nozzle is not affected. The automatic throttle which is nothing more or less than a butterfly loosely mounted above the regular throttle valve requires no adjustment.

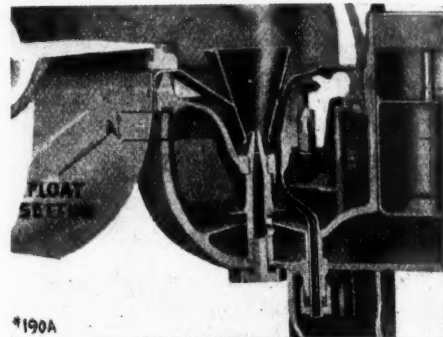
The Throttle Pump

The object of the throttle pump is to force gasoline to the spray nozzle when the throttle is opened quickly for acceleration. The throttle pump mechanism is contained in the float bowl casting at C and is controlled by the connecting rod E. When the throttle is opened the plunger is forced into the gasoline in the carbureter bowl. The plunger is drawn out of the gasoline when the throttle is closed. The proper adjustment of the throttle rod is when its upper end is flush with the upper face of the arm D. In other words the end of the throttle piston rod should be just flush with the top of the arm.

Set Carbureter Float

After the carbureter has been in use for some time there may be a slight amount of wear at the point of the inlet needle and its seat. If this should occur the height of the gasoline in the carbureter bowl will rise. To determine if the float is properly set remove the carbureter from the engine and the bowl from the carbureter. Raise the float until the inlet needle valve is just closed.

The dimension A, Fig. 190a, should be one-half inch. Should this setting not



meet the specifications it can be corrected by bending the arm to which the float is attached.

CLEARING HOUSE INDEX

(For use of readers who keep a file of *MOTOR AGE* issues)

Issue of Nov. 20, 1924

Meaning of numerals

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EDITORIAL

Thankful For—

WHEN \$20,000,000 in Christmas savings rolls from banks into the hands of eager buyers America is prosperous. Our little flurry of discouragement last summer was only a delusion after all. It might have become real if—but the voters settled that on Nov. 4. Good times are ahead, therefore we are thankful. The end of the year draws near. It has not been a disastrous year for those who lived true to the principle of making their business a genuinely useful institution of service to the public. The other kind found the acid test of 1924 too trying. That, too, is something to be thankful for because we have to get rid of the barnacles sometime. Now we can go ahead and look forward to 1925 as a year in which honest effort in the automotive business will be amply rewarded.

The Farmer Market

MANY automobile manufacturers are giving close attention just now to revision of field representation and it is especially noticeable that efforts are being made quite generally to strengthen connections in the smaller towns and rural communities. There is a reason for this. The farmer is regarded as a strong potential factor in buying. While he may not come into the market extensively this year there is a feeling in business circles that 1925 will find him spending money more freely than for some time.

It looks like there is a good era ahead for the small town dealer, a fact apparently sensed by the automobile manufacturers. They are getting set for a business which they expect to develop in the country, or, to put it more to the point, from the farmer's improved financial status.

The opportunity of the small town dealership and automotive shop is suggested somewhat in statistics compiled some time back by the National Automobile Chamber of Commerce in which it was shown that 33 per cent of the car ownership in this country is found in towns of 1,000 or under. Twenty-two per cent of the cars are owned by persons in towns of between 1,000 and 5,000 persons while as a class the farmer leads all others in ownership ratio.

Put the farmer and rural communities on a stable financial basis, therefore, and active buying in this field becomes inevitable. Best of all, when this field enjoys prosperity it is shared by the entire nation.

Tightening the Credit Policy

OVER-EXTENSION of credit in the sale of automobiles was gone into exhaustively at a recent conference in Chicago of bankers and representatives of automobile financing companies. The general conclusion

was just what might have been expected—that many automobile dealers carry the matter of crediting purchasers to limits which are unsound and hazardous.

Resolutions were adopted favoring a standard practice by dealers of requiring one-third down on a new car purchase, with the balance distributed in 12 equal monthly installments. This is a plan which has been advocated often before but it now assumes a new status of importance because of the action taken at the Chicago meeting.

Regardless of whether the dealer likes this particular formula as a device for application to his own business—he will admit the fundamental that over-straining credit is always bad practice. It is better any day to pass up a sales opportunity entirely than take undue risk or agree to carry a buyer on the books beyond a reasonable point. Requiring a down payment of one-third is safer in any case than a cash payment of 25 per cent, or less, while an extension of one year is more logical, from the standpoint of the dealer's own security, than 15 or 18 months.

Again we find ourselves discussing a proposition which bears directly upon the great issue of Profits vs Volume. Anyone can sustain volume business so long as capital holds out but there is vast difference between volume business and profitable business. When profits fail, volume has availed nothing. Until the automobile dealer collects a note, that note can produce no profit.

What the dealer desires is profit, and that means sure collections and cautious crediting.

The car in the showroom is always a better asset than a bale of long-time and questionable paper in the safe.

One Car—Two Votes

IN the recent national election approximately 30,000,000 votes were cast. The number of automobiles in operation in the United States is more than 15,000,000. This means roughly that for every motor vehicle there are two voters. In a great many cases these two voters are the car owner and his wife.

With affairs in that state there should be little to fear from legislation antagonistic to the motor vehicle. The danger, however, lies in the failure of the car owner to connect his duties as a citizen with his rights as a car owner and user. He needs to be awakened to a realization of the meaning of the political offensive against the motor vehicle. He may not realize that the tax he would object to most strenuously if levied directly is being extracted sweetly from him through his interest in motor transportation.

Two votes per car can easily dominate political decisions in the United States but if the voters don't know when voting that they are car owners their power is lost.

Factories Hit Year's Low-Tide Weeks

Plant Inventories Low and May Remain So Until January

Condition at Car Manufacturing Establishments Has Held Parts Makers to Same Pace

NEW YORK, Nov. 24.—Plant inventories are small as automobile producers swing into the lowest production weeks of the year and will not be augmented until there is a perceptible movement forward in car production. This is not likely to take place until the first of the year although there may be instances of individual factories increasing their schedules before then.

Two factors have entered into the inventory situation. Due to adequate transportation facilities, manufacturers have experienced little delay in getting parts and materials entering into the production of cars at 30 days notice and there has always been the chance of declining prices. The cost of materials took a sharp drop from March through July, mounted during the two succeeding months but in October fell 2 per cent from the September point and 7 per cent from that of the previous October. Car producers, moreover, have sought to escape the difficulties that beset them several years ago when a let-down in production and sales found them with large and costly inventories on hand.

Parts Follow Car Output

The maintenance of low inventories has kept parts makers operating at the pace set by car manufacturers although they have held their organization in such shape that a stepping up in production could take place promptly upon the quickening of demand. After the first of the year, parts production will show a marked upward trend.

Automobile output this month may reach the 270,000 figure. If it does it will indicate high production on the part of individual companies rather than any movement forward by the industry as a whole. Some producers in November will curtail output to rearrange plant facilities for greater production after the first of the year, but most manufacturers will delay factory overhauling until December.

Conditions throughout the country are good but they are not exceptional to the point of justifying increased manufacturing programs. Demand is satisfactory but not showing any strong advance, and retail sales continue to be the dominating factor in manufacturing operations.

There is still no sign that producers are preparing to accumulate stocks for demand next spring. Manufacturers have virtually no completed cars in stock and retailers are maintaining only such stocks as are needed to meet current demand. This points to high operations at the be-

He's New President of the A. E. A.



W. T. Morris, head of the American Chain Co., Bridgeport, Conn., was elected president of the Automotive Equipment Ass'n at its recent convention in Chicago

ginning of next year with the likelihood of new production marks being reached during the first quarter months at least.

Jennings Quits Dodge Factory Post for New York Dealership

DETROIT, Nov. 24.—C. H. Jennings, assistant general sales manager of Dodge Brothers is resigning this position effective Nov. 30 to become the Dodge dealer in New York City, covering Manhattan, the Bronx and vicinity. He will be succeeded at the factory by F. L. Sanford, formerly director of distribution.

Mr. Jennings has leased the building at 1763 Broadway as his sales headquarters and will locate his service building on West Sixteenth street. He is familiar with the general sales conditions in New York, as he was the New York district representative previous to his promotion to the executive staff at the Detroit office ten years ago.

PINES IN NEW ADDITION

CHICAGO, Nov. 22.—The Pines Winterfront Co. has occupied the new addition to its building at 404-424 North Sacramento Blvd., Chicago. This addition practically doubles the floor space of the factory, and greatly increases the capacity for the manufacture of Winterfronts.

Wilson, Widman and Townson Body Companies to Combine

Formal Announcement of \$12,000,000 to \$15,000,000 Merger Expected to Be Made Shortly

DETROIT, Nov. 22.—Formation of a new body company through the combination of the Wilson, Widman and Townson companies will be formally announced within the next few days, the new company to combine the manufacturing and financial resources of these three with an approximate capitalization of \$12,000,000 to \$15,000,000.

The company is expected to be named the Murry Body Corp. through the participation of J. W. Murray, and J. R. Murray of the J. W. Murray Manufacturing Co., although it has not definitely been indicated that the Murray company would be included in the merger.

The Murray Company will, however, either as a member company or a related company, supply the stampings for the body company. The personnel of the company is as yet not complete nor are the general details pertaining to the exchange of stock of the participating companies.

The merger is dictated purely by economic consideration within the industry. There is at present a large amount of excess capacity in the body field and competition for business has been keen. Independent companies have found it difficult to hold business in the face of competition from the larger manufacturers particularly in the Detroit district.

Within the recent past there have been several instances of business lost by independent body builders to the big companies and it has been increasingly evident that only through combination could the smaller companies remain in business profitably.

Probably the outstanding reason for the excess of capacity in the body plants is found in the fact that many car builders within the last 18 months have built body plants of their own which are now meeting their requirements.

Willys-Overland Company Calls Back 3500 Employees

TOLEDO, Nov. 24.—The Willys-Overland Co. has called back about 3500 of its men to go to work in 26 departments. The plant closed for inventory last Friday and had to cut short the usual two weeks period to three days. The rest of the men are expected to be back at work before Monday. In all the force may be brought up to 7500 men. Recently the company has been working about 5000 men and turning out 500 cars a day.

Cadillac Retailers Will Hold Yearly Gatherings at Factory

Company Finds Convention Productive of Closer Co-operation on Part of Those in Field

DETROIT, Nov. 24.—The plan instituted this year by Cadillac Motor Car Co. of bringing all its dealers as well as distributors to the factory for an annual meeting has worked out so successfully that it has confirmed the company in its intention to make this a yearly event. Throughout the organization a feeling of closer cooperation has been evidenced as a result of the meetings.

Many of the dealers attending the meeting brought salesmen with them at the suggestion of the company, thus extending even further the bond of feeling between the manufacturer and the retail sales organization. To take care of the attendance and to make certain that the individual impressions sought were registered the company divided the meeting into a series of five conventions, the whole covering six weeks.

Half of the time of the conventions was occupied in the factory buildings instructing dealers and salesmen in the work of manufacturing the car. The other half was spent in business sessions at which twelve factory executives and department heads talked upon the factory activities under their jurisdiction. The purpose of the convention was to make dealers and salesmen fully conversant with the policies of the company so that these might be carried out through the entire business circle, from the first stage of manufacture to the ultimate car owner.

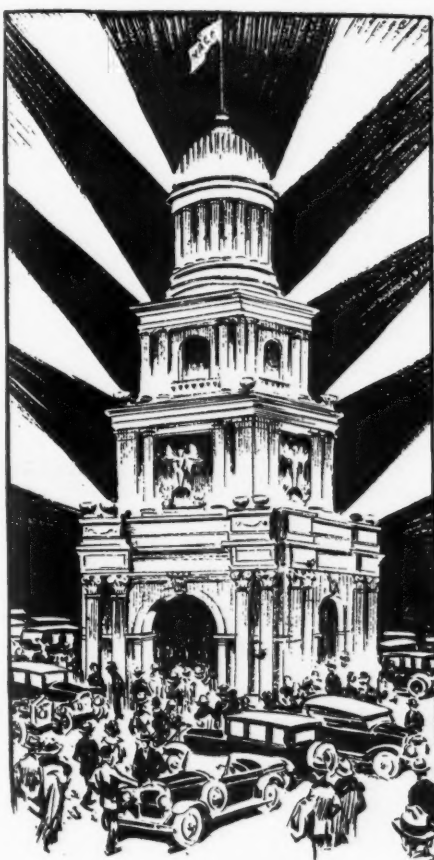
Cadillac Signs Two Former Experts for Efficiency Work

DETROIT, Nov. 24.—The Cadillac Motor Car Co. has added two important members to the sales department for the purpose of increasing field efficiency. The two new men are Phil E. Merrill, for 13 years in charge of Cadillac educational work, who returns to the company after an absence of three years, and Henry H. Batcheller, who formerly presented the Cadillac car to audiences at motor car exhibits. Mr. Merrill is undertaking co-operative work with salesmen throughout the country with the idea of developing effective methods of presenting the car to individual prospects. Mr. Batcheller will serve as the company's representative among distributors and dealers, assisting in the application of business administration methods.

COVERS DIXIE TERRITORY

ATLANTA, Nov. 24.—E. C. Kinney, formerly of the Nebraska Buick Auto Co., has joined the sales force of the automotive division of the Columbus McKinnon Chain Co., covering the southern territory, with headquarters at Atlanta, Ga.

Silver Tower for N. Y. Show



NEW YORK, Nov. 24.—To mark the Silver Jubilee of the motor car the National Automobile Chamber of Commerce has evolved the most elaborate decorative scheme ever devised for the New York National Automobile Show. The 258th Field Artillery Armory in the Bronx, where the exhibition will be held Jan. 2-10, is the one building in New York City that lends itself in area and height to the plan as it has laid out.

The central feature will be a gigantic silver tower, 75 ft. in height. It embodies features of the Tower of Pharos at Alexandria, which ranked as one of the Seven Wonders of the ancient world. This was built by Sostratus in the third century, B. C. to glorify the reign of King Ptolemy and to commemorate the achievements of his nation. The dome of the automobile show tower will be covered with leaf silver, and it will be equipped with 3300 floods of electric lights in various hues and colors. These lights will play throughout the period of the show, ranging from the barest glow to the glare of the noonday sun. All the remaining decorative features of the show will be in keeping.

DINGLEY BACK WITH MARMON

INDIANAPOLIS, Nov. 24.—Bert Dingley has been appointed service manager of the Nordyke & Marmon Co. He had been identified with the Marmon organization for several years but for the last six months has been district sales manager with the Franklin Automobile Co.

Commerce Department Puts October Output at 289,333

Figure Shade Under September With Passenger Cars Contributing 257,900 of Total Showing

WASHINGTON, Nov. 24.—Output of passenger cars and motor trucks in October aggregated 289,333, compared with 290,976 in the preceding month. Of this total passenger cars contributed 257,900 against 260,171 in September and 335,041 in October, 1923. Production of motor trucks during October reached a total of 31,433 as against 30,805 in September and 30,153 in October, 1923. These figures are contained in the monthly report on motor vehicle production compiled by the Department of Commerce. The following table is a recapitulation of the full year of 1923 and the ten months of the current year.

Passenger Cars		
	1923	1924
January	223,822	287,353
February	254,782	336,371
March	319,789	348,356
April	344,661	337,045
May	350,460	297,455
June	337,442	217,935
July	297,413	237,668
August	314,431	251,551
September	298,964	*260,171
October	335,041	257,900
November	284,939	
December	275,472	
Trucks		
January	*19,739	*28,929
February	*22,178	*31,161
March	*35,298	*34,138
April	*38,102	*36,169
May	*43,757	*33,421
June	*41,176	*27,894
July	*30,708	*25,251
August	*30,884	*27,523
September	*28,592	*30,805
October	*30,153	31,433
November	*28,085	
December	*27,772	

*Revised

Geo. Murphy Heads California Automobile Trade Association

SAN FRANCISCO, Cal., Nov. 24.—Election of officers was the principal business of the tenth annual meeting of the California Automobile Trade Association held here. A resolution was adopted opposing any increase in the gasoline tax or the registration fees for automobiles to be applied to new highway construction. The sentiment of the association was that the automobilist should pay for the upkeep of the highways, but that they should be built as a capital investment.

The following officers were elected for the ensuing year: President, George Murphy; manager-treasurer, Robert W. Martland. Board of Directors: A. C. Walker, Long Beach; George Hamilton, Los Angeles; Frank Paradis, Modesto, and Herman Hinze, San Francisco.

NAMED VELIE DISTRIBUTOR

SAN FRANCISCO, Nov. 24.—Lloyd S. Johnson, well-known Northern California motor car dealer, has been selected as the San Francisco distributor for the Velie line.

Committee to Urge Uniform Laws on Traffic Statistics

Safety Conference Will Also Hear Plea for Larger Public Expenditures for Accident Prevention

WASHINGTON, Nov. 24.—The adoption of uniform state laws in the collection of traffic accident statistics will be the major recommendation of the committee on statistics of the conference on street and highway safety, which will meet here on Dec. 15, 16 and 17. Another conclusion which the committee has reached is that the ratio of automobile accidents is so high and growing so fast year by year that the State and Federal governments "should authorize large expenditures towards street and highway accident prevention measures.

Another decision reached by the committee is that public authorities must more stringently regulate pedestrian traffic.

The committee found that there is almost a total lack of systematic effort to secure accurate and complete data regarding traffic accidents, and recommends that this be remedied by uniform laws requiring a report on all accidents.

The major recommendations which the committee will make in its report to the conference next month are as follows:

(a) That it should be made obligatory, by law, for those concerned to report all traffic accidents, and an adequate penalty for failure to report should be provided.

(b) That there should be a uniformity in the reports and that some competent body should undertake the compilation of standard definitions of terms.

(c) That reports should show (1) where due to recklessness, carelessness or incapacity of persons; (2) fault of mechanism of vehicle; (3) physical condition of the locality where the accident occurred.

In its final summing up the report will say: "Not only is the problem a grave one, but it is growing. The total number of motor vehicle fatalities—automobiles and motorcycles combined—increased 20 per cent between 1922 and 1923. Whatever the basis of calculation, whether it be in terms of 22,600 fatalities of \$600,000,000 annual loss, the economic loss due to street and highway traffic accidents has become so great that it warrants large expenditures towards their prevention.

TAKE OUT CHARTER

ZANESVILLE, Ohio, Nov. 22.—The White Chevrolet Co., of this city, has been chartered with an authorized capital of \$50,000 to deal in automobiles and trucks. Incorporators are Hugh and Elizabeth White, Lee D. Dutro, L. J. Weber and P. H. Tannehill.

\$30,000 Limousine Seen at Exhibit

OAKLAND, Cal., Nov. 22.—One of the principal sales attractions of the Pierce-Arrow Pacific Company exhibit at the Seventh Annual Automobile Show held here recently was the "most beautiful limousine" in the world, built in Paris in 1907, at a cost of \$30,000. The custom-built body, made of French walnut, originally was built on a Renault chassis, but this was worn out and a Cadillac chassis substituted. It is now mounted on a specially built Pierce-Arrow chassis, and was loaned by George A. Hensley of San Francisco, to the Pierce-Arrow company for this show.

The main body has traveled more than 500,000 miles in 21 countries, and was used by King Edward II, the Prince of Wales, King George, Queen Mary, King Manuel of Portugal, and the Duchess de Braganza, as well as other nobles of Europe.

The car is now permanently stationed in San Francisco, where Mr. Hensley's family uses it constantly.

Stratton-Bliss Co. Is Given Oakland Agency in New York

PONTIAC, Mich., Nov. 24.—The Oakland Motor Car Company, Pontiac, Mich., announces appointment of the Stratton-Bliss Company, 57th and Broadway, New York City, as dealers for the complete line of Oakland Motor Cars for New York City and the Metropolitan Area.

This appointment was made after a careful survey of the qualifications of scores of applicants for the Oakland franchise, according to C. W. Matheson, general sales manager of the Oakland Motor Car Company.

Oakland has in this new representation the advantage of the selling experience of Stratton-Bliss and a going organization of six branches and eight associates.

H. L. Stratton is president of the Stratton-Bliss Company, represents the N. A. D. A. on the Motor Vehicle Conference Committee and is chairman of the Merchants Association Committee of Control of Street Traffic in New York City.

Associated with the Stratton-Bliss Company is H. C. Miller, formerly general sales manager of the Winton Motor Company. Mr. Miller is general sales manager of the Stratton-Bliss Company.

EXHIBIT CLOSED CARS

CHATTANOOGA, Tenn., Nov. 24.—Chattanooga's closed car exhibit which held forth for five days proved a big success, according to reports of dealers. As a result of the show interest has been stimulated considerably in closed car window displays and they are found profitable.

Coolidge Receives Trade Ass'n Policy Ideas from U. S. C. of C.

Recommendations Are Made as to Collection and Dissemination of Statistics by Organizations

WASHINGTON, Nov. 24.—Declaration of a policy regarding trade associations is recommended in the legislative program of the chamber of commerce of the United States presented to President Coolidge. The chamber regards that such associations, legitimately conducted, are an essential in the promotion of American business and that legislation which would make them impossible or prevent them from functioning properly would hinder not only industry but also the prosperity of the nation.

The chamber offers the following recommendations, as voiced by its membership, regarding the use of statistics by trade associations:

"Statistics of capacity, production, stock and gains, and statistics of actual prices in close transactions, should be collected by a trade association for its industry or branch of commerce.

"Such statistics should be distributed without any comment or interpretation which could induce or facilitate concerted action on the part of members.

"The statistics should be made as available by a trade association to the public and government agencies as to the members of the association."

Referring to these recommendations, the chamber says:

"It is the duty of the chamber's board of directors to advocate the carrying into effect of these recommendations. In so doing it has to consider, not its own opinion of the legality of the activities which are included, but the attitude of the government and its officials who have relations to the question.

"If it is forced to a conclusion that the view is held in government circles there is illegality in activities the chamber's members have declared are desirable, it must consider seeking from Congress such minor amendments as will affirmatively permit the activities it advocates. Parenthically, it may be added that obviously the chamber does not seek repeal of the Sherman law.

WILL REPRESENT AUBURN

AUBURN, Ind., Nov. 22.—Auburn Automobile Co. announces the following new dealers:

Hornell Auto Metal Works, 114 Loden St. Hornell, N. Y.; Lewis L. Leighton, Westbrook, Me.; John B. Mick, Stanton, Neb.; Erie Motor Co., Painesville, O.; Auburn Sales & Service Agency, Merchantville, N. J.; W. K. Archer Motor Co., 7502 Halstead St., Chicago; Chicago Auto Sales Co., 11420 Michigan Ave., Chicago; Garfield Motor Sales, 55th & Wabash, Chicago; Rex Motor Car Co., 6919 Stony Island Ave., Chicago; L. W. Roehler Motor Co., Arlington Heights, Ill.

25 Years Ago In the Automobile Industry As Recorded In MOTOR AGE

(From MOTOR AGE of Nov. 30, 1899)

Canadian Stage Line

News comes from Vancouver of a projected stage line from Ashcroft, a place which has attained celebrity as an outfitting point for Klondikers on the all-Canadian route to the Yukon, to the towns of upper Cariboo. It is reported that the stages will be built at a Vancouver factory and that \$5,000 is now being spent on the construction of the first one. It is to have accommodations for 12 persons and half a ton of baggage and will have steam as the motive power.

A Vehicle Tire Combine

NEW YORK, Nov. 24.—The absorption of the New England Rubber Tire Wheel Co. by the International Automobile & Vehicle Tire Co. has been accomplished. The latter company, by the transaction, acquires, in addition to its well known pneumatic tires, the patents on the solid tire manufactured by the New England company. This tire is rigidly held to the rim by a steel ribbon passing through the tire near its base, the ribbon being drawn tight by a bolt passing through the rim which draws a U-shaped section of the steel ribbon down on the rim.

Another Company Formed

The Philadelphia & Atlantic City Automobile Co., with an authorized capital of \$100,000, has filed a certificate of incorporation in the Camden County Clerk's office. The company is empowered to "buy, sell and operate automobiles anywhere," but it is said on good authority that the real object of the company is to establish a line of omnibuses in Atlantic City.

Notes of Interest

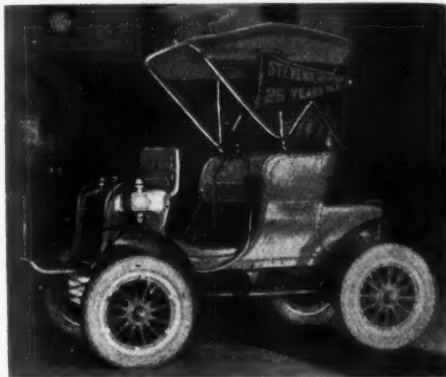
Twenty thousand dollars has been appropriated for a track and grand stand at Vincennes, France, for the purpose of testing automobiles. Prizes will be offered for four classes comprising heavy trucks, cabs, victorias and "voiturettes."

William A. Fisher Heads Body Corporation in Reorganization

DETROIT, Nov. 24.—Fred Fisher, Charles T. Fisher and Lawrence P. Fisher resigned as officers and directors of the Fisher Body Corp. at a special meeting of the board of directors. William A. Fisher was elected president and Edward F. and Alfred J. Fisher became vice-presidents.

H. J. Eckenrode, president of the National Plate Glass Co., Paul W. Selter, president of the Ternstedt Mfg. Co., both subsidiaries of the Fisher Corporation, and Clarence R. Bitting, assistant to the president of the Fisher Body Corporation, were elected directors. Louis Mendelsohn continues as treasurer and chairman of the board and A. Mendelsohn as secretary.

The United States Express Co. has been experimenting with an automobile delivery wagon in Baltimore. The results have proven so satisfactory that the company is considering the feasibility of gradually substituting automobiles in all places where they now use horse-drawn wagons.



This "Twenty-five Years Ago" photograph shows the Stevens Durea car which was exhibited recently in the sales room of the Stevens Durea Motors, Incorporated, Chicago

A Century for an Electric

PHILADELPHIA, Nov. 27.—A few days ago there was given a public test of an electric motor over South Jersey's smooth roads. The record run for a single charging, it is said, was that made by Comte Chasseloup Loubat in France, last summer, when 85 miles were covered with a single charge. In last Friday's trial a trifle over 100 miles were negotiated in seven hours and 44 minutes, including rests and stops which aggregated fully 20 minutes, and it was estimated that power to run the vehicle at least ten miles farther still remained in the batteries. During the trial a speed of 20 miles an hour was attained at times.

According to Fred J. Fisher, Lawrence P. Fisher, Charles T. Fisher and himself have been requested by General Motors to devote the greater part of their time to that company. Charles T. Fisher will continue, however, to take an active part in the management of the Fisher corporation.

Fred J. Fisher is a member of the board of directors and executive committee of General Motors and was recently elected to the Finance Committee. Charles T. and Lawrence P. Fisher are also members of the General Motors board of directors and executive committee.

Mr. Fisher also stated that the change did not indicate any change in his or his brothers' interests in the Fisher Body Corporation.

Lumbermen Report Pick-up in Business With Motor Industry

Increased Demand for Woods Follows Period of Slack Interest by Automotive Interests

CHICAGO, Nov. 24.—A sharp increase in the volume of orders and inquiries from automobile interests is reported by hardwood manufacturers and wholesalers. This demand follows a period in which the automotive industry showed but little interest in replenishing lumber supplies. Lumbermen are of the opinion that automobile establishments have pretty well cleaned up their stocks and that they will be a larger factor in hardwood buying from now on.

A few of the Wisconsin automobile and body plants have been steadily in the market for hardwoods for some time, it is reported, while most of the Michigan plants have been substantially out of the market, buying only in small lots for filling-in purposes. Most of the new inquiries now are from these consumers.

Lumbermen are basing their predictions of an early active demand from the automobile industry upon reports indicating plans for increased closed car production. In this they see a good business ahead for thick birch, maple, elm, and other woods, used in the manufacture of both passenger cars and trucks.

Jacksonville, Florida, Ford Plant Is Now in Operation

JACKSONVILLE, Fla., Nov. 22.—With 350 men employed, the Ford Motor Co. assembling plant here started this week to turn out cars and trucks in quantity. The output is 50 vehicles a day, of which 15 per cent consists of trucks. This will be speeded up until the designed capacity of 150 a day is reached. The new plant will supply all of Florida and two counties of Georgia, a total of 170 dealers, with all Ford products.

The plant consists of the main building, 200 by 500 ft., one story high and has a concrete dock. A railroad siding enters the main building one side and the assembling progresses across the width on moving platforms and conveyors. The whole investment will amount to about \$500,000. The yearly payroll at capacity will amount to about \$1,000,000.

NEW BRAKE PERFECTED

DETROIT, Mich., Nov. 24.—The Hydraulic Brake Co., owner of the patents covering Lockheed hydraulic brakes, has developed a new internal brake of the three shoe type. Use is made of the energy of the rotating drum with consequent reduction of pedal pressure and the degree of braking obtained is directly proportioned to the pressure applied to the pedal and at all times directly under the control of the operator. The new brake is actuated hydraulically in substantially the same manner as the Lockheed external brake.

Large Crowds Attend Show of Los Angeles Tradesmen

Patronage of Possibly Record Size Sees New Car Models and Accessories Under Tents

LOS ANGELES, Nov. 24.—Huge attendances greeted the twelfth annual automobile show here recently. Detailed reports are not available at this date but it is believed a new record was established. The crowds packed all available space and although vacant lots and driveways were converted into parking places, the radius within half a mile of the location was almost solid with parked cars.

There were 49 different makes of automobiles on exhibition, 10 lines of commercial vehicles and 78 accessory exhibitors. The number of vehicles of all makes on display approximated 400. The value of the vehicles shown exceeded \$1,000,000. From a physical standpoint the show was the largest ever staged here as four enormous tents providing 162,000 sq. ft. of floor space were utilized. Covered board floors were used and the tent tops and walls were concealed by draperies.

Feature Exhibits Absent

Feature exhibits which have been prominent in the past were noticeably lacking. Very few special jobs were exhibited, the dealers evidently being satisfied with the appearance of their standard stock models. Closed cars were shown in numbers practically equal to the open models and considerable effort was used to attract attention to the convertible types of bodies. Those depending on sliding curtains concealed in the top failed to make the impression at this show that they may make elsewhere because this construction is not new in Southern California.

There were the usual stripped chassis and demonstrating lectures. The show was very hard to analyze from the standpoint of business conditions it disclosed. Some sales were made but a canvass among exhibitors showed the number was small. It was admitted that the sales of cars selling here for more than \$2,000 was very limited.

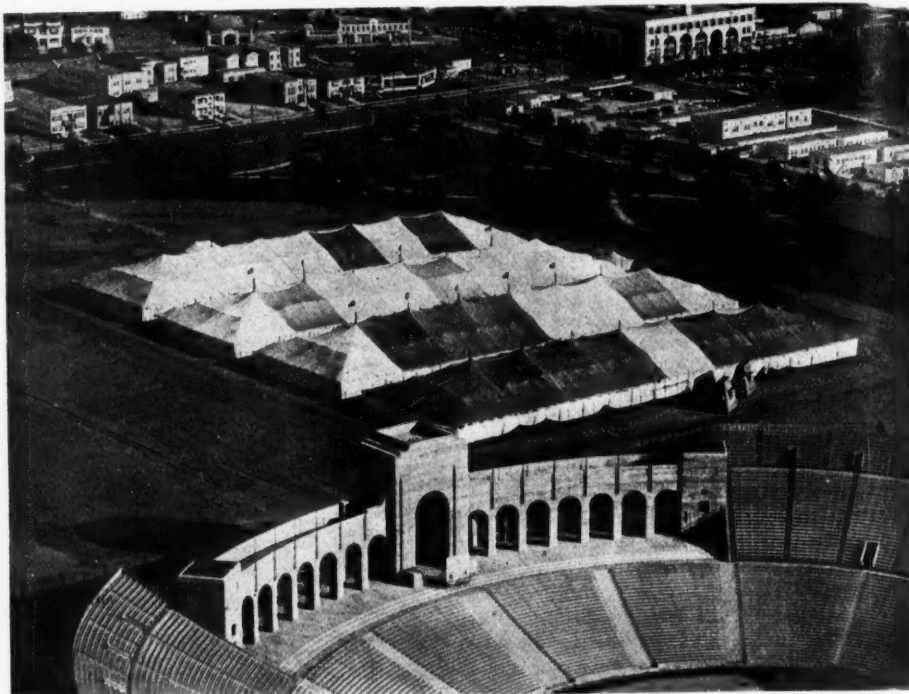
Unusual interest was shown in the accessory displays. The tent devoted to these was packed solid at times when there was vacant space surrounding car booths.

STROM MAKES APPOINTMENT

CHICAGO, Nov. 22.—The Strom Ball Bearing Mfg. Company, of Chicago, announces appointment of Alfred G. Norris as manager of the company's New England office, 75 Pearl street, Hartford, Conn. Mr. Norris has been identified with the ball bearing industry for a number of years and has a wide acquaintance among industrial engineers and manufacturers in the New England states.

A. W. Wiese, sales engineer for the Strom Company, has been transferred from Philadelphia, to the Hartford office.

Airplane View of Tents Which Housed Recent Show in Los Angeles; Coliseum in Foreground



OBTAIN NASH LINE

MOLINE, Illinois, Nov. 24.—Fred E. Cox and William McClean, proprietors of the Auto Service Company of this city, have secured the agency of Nash Motor cars in Rock Island and Henry counties. For the past five years Moline has been without a Nash agency, the line having been discontinued in 1919 by the Ostlund Motor Company, now out of business. Mr. Cox and Mr. McClean visited the Kenosha plant and returned with latest models of the Nash line which will be demonstrated at their salesrooms, 515 Thirteenth street. They are also agents of the Chevrolet line.

TRAVIS SUCCEEDS TOBACK

NEW YORK, Nov. 19.—E. A. Travis, for a number of years identified with the automotive industry, has been appointed vice-president and general manager of the Marmon Automobile Co., of New York, to succeed Sam S. Toback, resigned.

Mr. Travis was sales manager of the Locomobile Co. at one time and later was assistant to W. C. Durant of Durant Motors. In February, 1922, he was appointed auxiliary receiver for the Locomobile Company.

NAT. STANDARD ADDS TO LINE

NILES, Mich., Nov. 21.—The National Standard Co. is now manufacturing two shop equipment articles which were purchased from the Continental Company of Columbus, Ind. These are the National-Standard wrecking crane and the National-Standard creepers. These are in addition of the National-Standard line of jacks.

Hairpin Turns, Steep Grades, Face Ascot Cup Race Drivers

LOS ANGELES, Nov. 24.—There will be no lack of thrills for the speed fans here Thanksgiving Day with races scheduled on the new board speedway at Culver City, a suburb, and Ascot Park.

The Culver City race is a 250-mile championship event. Entries at this time include: Bordino, Mourre, Milton, DePalma, Hill, Hartz, Comer, Schafer, Hearne, Durant, Wonderlich, Cooper, McDonogh and others.

The Ascot Park contest will be over an especially built course including the dirt speedway. A spectacular course has been laid out on the sides of adjacent hills having steep grades and hairpin turns. This race is not under A. A. A. sanction and will be a free for all. Among the makes of cars said to be nominated are: Jewett, Miller, Duesenberg, Wills-Ste Clair, Packard, Chrysler, Frontenac, Hudson, Lexington, Ford, Chandler, Cole, Kissel, National, Buick, Stutz, Mercedes, Essex, Lancia, Studebaker, Cunningham and Fronty.

LAY OFF 100 MEN

MOLINE, Ill., Nov. 24.—What is termed a pre-winter slump has resulted in the temporary lay-off of about 100 men from the Moline Body Corp. Factory officials, however, expect to increase the force to normal again in the near future. They are now employing about 250 men, not including members of the force recently added when the body corporation took over the property and part of the force of the R & V Motor Company.

Alfred P. Sloan, Jr., Presents Views Upon Business Outlook

General Motors Head Expects Good Year in 1925. Calls Overproduction Economic Loss

NEW YORK, Nov. 24.—"We all recognize that the dealers, for various reasons, have not made sufficient return on their capital when considered as a whole," says Alfred P. Sloan, Jr., president of General Motors Corp., in a statement on the outlook in the automobile field for next year. "The industry," he adds, "cannot attract men necessary to carry forward the tremendous burden of distribution unless there is an adequate reward."

Mr. Sloan's statement is as follows:—"I have been asked to comment on the effect of the election as influencing the trend of the motor car industry and having always felt it to be the duty of everyone to contribute what they can for the benefit of all, I am glad to do my part."

"The tremendous indorsement given Mr. Coolidge, following the result of the elections in England, cannot help, in my judgment, but develop confidence in the minds of all thinking business men the world over. This is sure to lead to the freer development of industry with increasing general prosperity. The question before the motor car industry is—just what does this mean to us? And when I say 'us' I mean not only the manufacturer but the distributor and dealer as well because we are all part of the same great family. If one is to prosper the others must."

Good Prospects for 1925

"I believe the year 1925 is sure to be a good one for our industry. Economic conditions appear to be thoroughly sound and with the confidence firmly established, industry is bound to go forward. That means that people will buy motor cars in generous volume. I look forward to a business as measured by sales of cars to consumers at least equal to this year."

"I hope we are going to profit by experience. It must be admitted that there was overproduction in the early part of this year. Overproduction simply means an economic loss to all concerned. Although the consumer may temporarily buy to advantage through lower selling prices forced by necessity of liquidation, the cost, whatever it happens to be, must ultimately be passed on to the consumer. Overproduction must be followed by readjustment and a period of more or less reduced employment. This means a lower wage scale and the general upsetting of the whole cycle of industry."

Adhering to Policy

"General Motors definitely announced its position as to production some months ago and is consistently adhering to that policy. Our unsold stock of cars in the field at the close of this year will be fully adjusted to that policy and will only be what is necessary to properly move current business. As a matter of fact, such

stock will be less than one-half of the corresponding period last year. This is sure to help our dealers. We all recognize that the dealers, for various reasons, have not made a sufficient return on their capital, when considered as a whole. The industry cannot attract men necessary to carry forward the tremendous burden of distribution unless there is an adequate reward."

"As to the trend of prices, I cannot see any justification of any price reductions. Certainly, material will not be any lower—if anything higher."

"I see no possibility of a reduction in the cost of living that would justify any considerable lowering of the wage scale. It is a matter of record that present prices reflect a very close margin of profit to the manufacturer, and the dealer's position we all know. From the standpoint of the public the real worth in present cars is greater than at any previous time in the history of the industry. I believe that manufacturers who reduce prices in the hope of getting business from competitors are going to be disappointed. General Motors is not going to take that position."

Olds Sales 62 Per Cent Over Last Year First Ten Months

LANSING, Mich., Nov. 24.—During the first 10 months of the year, according to a factory statement, producing and sales of the Olds Motor Works showed an increase of approximately 15,000 cars or 62 per cent over production figures of the year previous. This showing is very gratifying to the Olds management in view especially of the fact that the industry on the whole will register a production loss this year as compared with last. It is expected that the Oldsmobile coach, which is offered at a record low price for cars of this type, will help sustain high output the rest of the year. Factory schedules call for 5,000 units of this body type alone, the last two months of the year.

DE PALMA WINS AT TANFORAN

SAN FRANCISCO, Cal., Nov. 22.—Ralph De Palma, driving a Miller Special, won the 100 mile race on the one mile dirt track at Tanforan, last Sunday, in 1 hr. 42 3/5 sec. Pietro De Palo, Duesenberg Special, was second; Eddie Hearne, in Hearne Special, third; Earle Cooper, driving Weaver Special, fourth and Tommy Milton, driving Miller Special, fifth. Attendance was about 20,000 at this revival of dirt track racing in northern California. Phil Shafer threatened De Palma for 28 of the 100 laps, but on the 29 lap Shafer broke a crankshaft and had to quit. Fred Wagner was starter. John D. Stelling is manager of track.

BIFLEX MEN GATHER

CHICAGO, Nov. 22.—The Biflex Corporation, of Waukegan, Ill., recently held an enthusiastic sales convention which continued for four days. A banquet was one of the features.

Motor Financing Companies Form National Association

Organizations Represented Have Combined Capital of \$29,110,000 and \$217,955,000 Annual Business

PITTSBURGH, Pa., Nov. 24.—The National Association of Automobile Financing Companies was formed at a meeting here of 30 executives of motor finance companies from all sections of the United States. By-laws were adopted and several other important matters were disposed of but election of officers was left for a meeting to be held in Chicago on Dec. 10.

The new organization has as its chief object, according to the by-laws, the unification of the interests concerned for education, correctional, legislative, productive and other purposes generally co-operative.

The combined organizations represented in the new association have a capital of \$29,110,000 and do an annual business of \$217,955,000. The adoption of the constitution and by-laws and a general discussion by the company executives present as to the most practicable plans for augmenting the activities of the association from time to time consumed the entire time of the session.

In his opening address as temporary chairman of the meeting, E. Arch Cohen, of Pittsburgh, explained the aims and purposes of the association to be formed and declared that "The activities shall be directed toward the promotion of sound banking practices, elimination of adverse criticism, protection of capital investment, and to cement a fraternity with evidence of good will and fellowship."

Dealers From 7 States Attend Memphis Ford Plant Opening

MEMPHIS, Tenn., Nov. 24.—Ford dealers from seven states attended the formal opening here recently of the Ford Motor Company's new plant on South Parkway. About 400 dealers were present. The program was both instructive and entertaining. Features included a sales clinic, a model shop for inspection, a tour of the entire plant, luncheon, and burlesque show depicting the evolution of Ford sales. The operation of a Ford service station was demonstrated. The selling of Fords, Lincolns and Fordsons was also demonstrated.

The plant is now running full force, producing in the neighborhood of 300 cars daily. The plant cost \$1,500,000, has 200,000 sq. ft. of floor space and employs 1500 people. More than 200 closed bodies are assembled daily.

GEYLER GARDNER DISTRIBUTOR

ST. LOUIS, Mo., Nov. 24.—The Gardner Motor Car Co. has announced that the Louis Geyler Co. of Chicago had been named Gardner distributor in that territory.

Fall Retail Sales in St. Louis District Exceed Anticipations

Chief Demand Is for Medium and Low Price Cars. Closed Types Popular

ST. LOUIS, Mo., Nov. 24.—Retail sales of automobiles have been surprisingly good here this fall. Especially is this true of closed cars. The chief demand is for medium and low priced cars. However, firms handling the more expensive lines say they are having an unusually fine fall business.

Used cars are not going so well now. As is usual at this time of the year, the buyers of used cars are out of the market. The rural sections surrounding St. Louis have been fertile fields for automobile sales. As was predicted at the start of the year the farmers who have been inactive buyers of machines for the past two or three years have come back into the market strongly this fall. Accessories are selling well. Firms generally report that their sales are from fifteen to thirty per cent ahead of last year. Accessory dealers here are now busy arranging their Christmas campaign.

STARTS OWN SALES FORCE

MILWAUKEE, Nov. 24.—The American Grinder Manufacturing Co., of this city, making Blackhawk wrenches and other lines, has organized its own sales force instead of marketing its product through C. W. & F. W. Jonas, manufacturers' representatives. C. N. Jonas of that concern has joined the staff of the American company as sales manager, while F. W. Jonas will serve as western manager. Most of the salesmen of the Jonas organization have been employed by the American Grinder company.

REPUBLIC GEAR GROWS

DETROIT, Nov. 22.—Republic Gear Co., organized as the replacements parts division of the Detroit Bevel Gear Co., has moved to a new location in Detroit, its business having outgrown the facilities of its former headquarters.

The company was organized this year to handle the replacement business of the Bevel Gear Company by H. N. Nigg, who is president and general manager. Mr. Nigg is also the organizer and general manager of the Bevel Gear Company. The directorate and officers of the two companies are the same.

HAVE NEW SERVICE STATION

MONTREAL, Can., Nov. 24.—A new modern fire-proof service station supplementary to their large establishment on Park avenue is evidence of the steady and continuous growth of Just Motors, Limited, one of the pioneer Ford distributors of Quebec Province. This service station was opened for the benefit of the many down-town Ford owners.

CONDUCTS SERVICE SCHOOL

SAN FRANCISCO, Nov. 24.—T. H. Wade, traveling service man of the Dodge Brothers organization, spent several days recently with the J. E. French Co., San Francisco Dodge Brothers dealers, during which time he conducted a service school attended by the service managers of the Dodge Brothers dealers of Northern California.

Lighter Sales But Larger Net for Continental Motors

DETROIT, Nov. 22.—An increase in net profits of approximately 20 per cent over last year is expected to be shown by the Continental Motors Corporation with the closing of the present fiscal year.

In speaking of the year's business, W. R. Angell, vice-president of the company said:

"While of course it will be several weeks before the auditors have completed the annual statement, from all indications the company will show satisfactory increase in profits over last year, although our sales were slightly less. Our cash position is the best in our history.

"Through reductions and inventory and through various economies effected, we have been able to materially increase the ratio of our current assets to current liabilities. This ratio is now approximately 11 to 1. On the whole we have had a very satisfactory year."

REO OPENS RADIO STATION

DETROIT, Nov. 22.—Reo Motor Car Co. opened and dedicated its new radio station recently in conjunction with the official announcement of its new closed models.

The sales branch of the company in Lansing maintained open house during the program, giving the radio performance and showing the new models.

"Highspeed" Highway for California

WASHINGTON, NOV. 24.—A total of \$5,000,000 will be spent for paving new highways in California next year, according to estimates sent the U. S. Bureau of Public Roads, by the State Highway Commission. To this sum the Federal government will add approximately \$4,600,000, making the good road's expenditure in California total almost ten millions of dollars. The work is designed to meet the rapid growth of traffic in California and will provide for the first "high-speed" motor highway in the country, where there will be a middle artery for two-way traffic where automobiles can travel at a minimum of 35 miles an hour.

Expect New Method to Make it Harder to Sell Stolen Car

Michigan Certificate of Title Will Be Stamped Indelibly With License Plate Number

DETROIT, Nov. 24.—Certificates of title for cars, required under the Michigan statutes for lawful possession, will hereafter be stamped indelibly with the number of the license issued and corresponding with the certificate. This will make it more difficult to dispose of a stolen car to a dealer or to the public. This change has been worked out by the Department of State through the active co-operation of the Michigan Automotive Trade Association and the Detroit Automobile Dealers' Association.

In revising the requirements, it has been pointed out that car owners are careless of the number plates and that often they are not attached to the cars for which they were purchased. The law requires that both the license and the certificate of title be transferred in the event of a sale of the car during the year, in which it was licensed. The title cannot be transferred unless the license is also transferred. The stamp of the license number on the certificate gives the dealer and purchaser assurance that the car is properly owned.

BUYS RETAIL BUSINESS

ROCKFORD, Ill., Nov. 22.—Louis L. Lebkicker has purchased the territorial rights and other holdings of the Automotive Corp., Rockford, Ill., and the company hereafter will be known as the L. L. Lebkicker Maxwell and Chrysler Sales and Service. Ira Bell was president of the Automotive Corp. His plans for the future are not announced. He has been distributor of Maxwell, Chalmers and Chrysler cars in the Winnebago County territory. Mr. Lebkicker comes from Freeport, where he has been Ford distributor.

CHANGES BY AUTOCAR

ST. LOUIS, Mo., Nov. 22.—John H. Mack, who has been manager of the St. Louis branch of the Autocar Co., of Ardmore, Pa., for the past six years has been named special factory representative of the Autocar Co. in New York City and has been succeeded here by E. S. Mills, formerly of the factory at Ardmore.

FRENCH SHOW PLANS UP IN AIR

PARIS, Nov. 12 (By Mail).—By reason of their failure to get together and decide in favor of a 1925 show, French automobile manufacturers are in danger of being deprived of an exhibition next year. The only hall of sufficient size for the French automobile show is the Grand Palais, a Government building which several months ago was ceded to the

A. A. A. to Train Guns on Frivolous Laws and Persecution of Motorist

Petty Parking Regulations Designated Especially for Organizations Opposition. Find Instances of Ridiculous Quibbling

WASHINGTON, Nov. 24.—The American Automobile Association, through its Legislative Board here, has announced its intention of opposing what is described as "needless and unjust persecution of the motorist, especially with respect to the problem of parking." The Board declares that there is a tendency among municipal authorities, "which almost becomes a passion" to set up petty and needless regulations which not only harass the motorist, but which make him have a natural tendency to hold all automobile laws in more or less contempt.

Representatives of the Board, in conducting a study of the parking regula-

tions, report that in many instances they have come upon minions of the law quibbling with motorists for parking three and five minutes overtime, and which resulted in the motorists' arrest.

The study shows that the hysteria for "over-regulating" the automobile user has become so common among authorities, that "a large percentage of users would rather walk than be bothered." The Board recommends to its affiliated motor clubs throughout the country that "the motorist must focus his attention more on city officials who are taking too many liberties with the parking situation."

SCHOOL OFFERS "MASTER COURSE"

DETROIT, Nov. 22.—A "master course" for automobile mechanics and service superintendents has been established by the Michigan State Auto School, Inc. This course requires not less than 30 weeks of daily school attendance and is intended to thoroughly equip a man to be a foreman or service manager, or to manage his own shop. The course includes the following subjects: Engines, chassis, electrical practice, garage work, driving, tractors, welding, battery repairing, tire repairing, machine shop work, business practice. The course is so arranged that students may enter any time, new classes starting each Monday. Students who so desire may spend longer than the prescribed 30 weeks on the course.

SELL CLEVELAND SIX

CLEVELAND, O., Nov. 22.—The Cleveland Automobile Co. has appointed the following dealers:

A. P. Mitchell Auto Co., Fort Worth, Tex.; Chandler-Cleveland Sales Co., Tampa, Fla.; Watt Smith Auto Sales Co., Muncie, Ind.; Chandler-Cleveland Motor Sales Co., Madison, Wis.; Cleveland Motor Sales Co., Waterloo, Iowa; Valentine-Chandler Co., Springfield, O.; Popular Motor Corp., Buffalo, N. Y.; Cleveland Hubbard Co., Buffalo, N. Y.; Lansing Auto Exchange, Lansing, Mich.; H. F. Killean Auto Co., Clinton, Iowa; Reinertsen-MacDonald Motor Co., Everett, Wash.; Bush Motor Co., Providence, R. I.; Athow Auto Repair Co., Tacoma, Wash.

BOYCE-ITE CAMPAIGNS ABROAD

NEW YORK, Nov. 24.—Wallace R. Parrell, advertising manager of Boyce & Veeder Company, Long Island City, is in England laying plans for the invasion of Boyce-ite in foreign markets. The Boyce & Veeder Company contemplates what possibly will develop into an extensive campaign for foreign business.

Elaborate Automobile Hotel Planned at Houston, Texas

HOUSTON, Tex., Nov. 22.—One of the finest automobile hotels in the southwest is to be located at Houston.

The contract has been let for the erection of a four story building to be used by the Kier-Nickels Garage. It will cost \$300,000. The building will have a storage capacity for more than 600 cars.

The first floor will be given over to filling stations and tires and accessory stores. There will be battery service stations and elaborate ladies rest rooms. On the second floor will be "private rooms" for the automobiles while the third floor will be given over to a bonded warehouse business for dealers and for customers who wish to store for weeks or months.

The basement will contain the "automobile laundries" and the greasing racks, polishing devices and other machinery. The new "hotel" will be in operation in four or five months.

HAVE NEW LOCATION

PETERSBURG, Ill., Nov. 24.—Boeker & Juhl, who last spring opened the Dodge Brothers and Overland car agency here, have purchased the Campbell garage and sales room, taking immediate possession and transferring their business to that location. Charles Campbell, former owner, will become salesman for the firm.

CARBOLAX FUEL COMPOUND

A typographical error occurred in the Oct. 30 issue of MOTOR AGE in connection with the description of a fuel compound known as Carbolax and made by the Carbolax Products Co., Chicago. The product was referred to as Carbola.

Du Pont Motors Planning Removal to Wilmington

Return to Company's Former Home Will Be Followed by Active Production Program

WILMINGTON, Del., Nov. 24.—Du Pont Motor Mfg. Co., manufacturers of the du Pont Automobile, has decided to move its works from Moore, Pa., to Wilmington, according to E. Paul du Pont, president of the company. The date for the change has not been determined. The plant at Moore has been sold to the Alloy Metal Wire Co., of New York City, but is being occupied temporarily by the du Pont Co., pending the proposed change.

A location in Wilmington for the works has been selected, according to Mr. du Pont, but he is not ready to make it public.

Du Pont Motors, Inc., started in Wilmington in 1919. In 1920 the plant was moved to Moore. The years 1923 and 1924 have been devoted entirely to the development of a six-cylinder engine. Prior to that time experiments were made with a four-cylinder engine.

Now that the car has been perfected, it is ready to be placed on the market. It is planned, however, to start production slowly and gradually. Agencies are being opened up gradually. Three models are being made now, the two-passenger and five-passenger open and the four-passenger closed cars.

Francis I. du Pont is vice-president of the company; Charles B. Bishop secretary. Ernest du Pont is a director.

Experts Review Service Progress

(Continued from page 13)

John Younger, editor of Automotive Abstracts, read a paper on "The Training of Mechanics." He divided automotive mechanics into two classes, machine hands and bench hands or hand work men. In addition to these there are the trouble shooters who do not do neither class of work, but who must have had some experience.

A startling fact was disclosed when a canvass of a number of automotive mechanics disclosed the fact that 78 per cent of them had picked up their own mechanical training in various ways and only 22 per cent had had any regular training for their jobs.

In addition to the mechanical training, Mr. Younger suggested that young men also receive training in the economics of the business and in courtesy and salesmanship. Too many young fellows see themselves get 60 cents an hour for their work and see the boss take in \$1.20 and think that this is all velvet for the boss. A knowledge of overhead, equipment, sales expense and losses will change his opinion, Mr. Younger said.

Retailing Likely Will Rule Production for Rest of Year

Factories Operating on Average of About Sixty Per Cent of Plant Capacity

DETROIT, Nov. 24. — Production throughout the industry continues to be held close to retail sales figures.

The only factories at capacity are one or two of limited output which have been enjoying a large business throughout the year. A figure of about 60 per cent spread throughout the industry would probably approximate the general rate of operations though some factories are operating at better than this figure and some slightly under it. There are strong indications at this time that retail sales will govern the rate of production throughout the balance of the year with perhaps some slight stocking in the latter weeks.

In most cases dealers are not expected to take cars for spring business until after the first of the year and stocking then will be much lighter than in former years. The outstanding reason for reduction of general stocking is that factory capacities have now as a general rule been built up to a point where maximum operation can meet almost any demand as it arises.

Several factories within the last few weeks have declared against any plan to stock dealers. For this reason any demand that comes can be met by extending factory operations to the limit though this must be anticipated to the extent necessary of getting in material and parts stocks and also in building up the factory force. Another minor reason why stocking will not be as extensive as formerly is that a number of companies including some of the large producing ones will be bringing out new models for exhibition at the shows and are giving over the balance of this year to closing out stocks of material for present cars.

There are indications that most of the preparations for spring business by factories will consist in the manufacture and assembly of semi-finished parts over the current market requirements. By holding these in reserve factories will be in position to increase output materially at any given time without the necessity of making large increases in working forces or schedules. There is a general disposition to avoid storing of finished cars or parts.

NEPHLER FORMS COMPANY

PONTIAC, Mich., Nov. 22.—C. J. Nephler, former sales manager of the Oakland Motor Car Co., has formed the Nephler-Oakland Co., with headquarters in Pontiac, to take over the wholesale and retail merchandising of the Oakland car in Oakland, Livingstone and Lapeer counties.

Tradesman Wins Governorship

BOSTON, Nov. 24.—Massachusetts has the honor of being one of the first states to chose for its governor an automobile dealer. The man is Alvan T. Fuller. He is the distributor for the Packard car in Eastern New England.

Running against him was Mayor James M. Curley, of Boston, a great campaigner. Mr. Fuller won by more than 150,000 votes.

Improved Conditions Noted in Europe by John N. Willys

TOLEDO, O., Nov. 24.—Bringing a report of improved business conditions across the Atlantic, John N. Willys, president of The Willys-Overland Company, has returned to Toledo, after a hurried business trip of three weeks, during which period he visited the Paris Salon and London Olympia motor car shows.

"The European political situation is rapidly being cleared and there is gradually being constructed a basis for sound business growth which is bound to be reflected in our own greater prosperity as European markets are created or enlarged for the American manufacturer," said Mr. Willys.

"Our British connections expect improvement in sales conditions, although in some regions doubt is felt as to whether any appreciable expansion of business will be possible before spring."

TAKE OVER TRUCK PLANT

BUFFALO, Nov. 24.—Papers incorporating the Buffalo Truck Corporation, capitalized at \$100,000, were filed recently in county clerk's office here. The company will take over the plant and equipment of the Buffalo Truck & Tractor Corporation, 1231 Main street.

The directors of the new company are: Harry D. Sanders, Wallace H. Winkist, Eugene McMahon, Donald Waite, and Vernon A. Ellsworth.

NEW POST FOR EASTMAN

CHICAGO, Nov. 22.—Frank G. Eastman has resigned as a member of the sales section of the advertising staff of the General Motors Corp. to become a member of the Glen Buck Co. organization in Chicago. Mr. Eastman is well known in the industry as a former advertising manager of the Packard Motor Car Co., with which he was identified for eight years, and as advertising manager of the Lincoln Motor Car Co., as organized by Henry H. Leland.

Average of Outstanding Time Notes on Cars Diminishing

Survey Made by N. A. C. C. Reflects Tightened Credit Measures in Motor Vehicle Trade

NEW YORK, Nov. 24.—A steady decline in the average of automobile time payment notes outstanding is shown in a survey of finance companies covering a period of years as made by the National Automobile Chamber of Commerce. In 1923 this average was \$252, compared with \$276 in 1922, \$299 in 1921 and \$277 in 1920. The decline is attributed to the lower prices of automobiles today as compared with 1920 and to the tightening of credit risks by finance companies and dealers.

The survey shows that the average note at time of purchase on new passenger cars declined from \$810 in 1920 to \$695 in 1921, to \$612 in 1922 and \$587 in 1923. Truck paper declined from \$1,145 in 1920 to \$765 in 1923. The average note on used passenger cars at the time of purchase in 1923 was \$303 and on used trucks, \$374.

Companies reporting on the item of losses during 1923 purchased automobile paper aggregating \$193,559,569, of which \$362,432, or less than 1 per cent was stricken off a loss. A considerable number of the companies doing business on the dealer indorsement plan report no losses.

Accounts 30 Days Past Due

Accounts 30 days past due on Dec. 31, 1923, as reported by 36 finance companies, doing business of \$230,617,464 amounted to \$798,750, or 35/100 of 1 per cent. The same companies had notes 60 days past due on that date aggregating \$451,900, or 19/100 of 1 per cent. Notes held by these companies past due on Dec. 31, 1923, totaled \$3,152,441, or the equivalent of 1.36 per cent.

The total volume of retail business transacted in 1923 by 50 finance companies which comprises practically all the large concerns was \$281,079,250. Of these concerns 45 financed at retail 466,998 new and used motor vehicles involving deferred payments amounting to \$234,815,559.

TAKE ON FORD

MADISON, Wis., Nov. 22.—One of the most important changes in Ford representation in Wisconsin is that which is announced from Madison. The L. F. Schoelkopf Co., which has been Ford distributor for the Madison district for nineteen years, has relinquished the franchise. The Fox Motor Sales Co., 105-111 East Doty street, succeeds it and is relinquishing the Hupmobile, which it has represented five years. Officers of the Fox Company are: President, Neill W. Fox; vice-president, Paul R. Kentzler; secretary-treasurer, Robert L. Pfister.

General Drop in Employment at Automobile Plants Shown

Reports received at Washington indicate Seasonal Decrease. Tires, However, Increase Forces

WASHINGTON, Nov. 22.—A general decrease in the number of employes working in the automobile industry is shown in the November industrial survey of the United States Employment Service. Telegraphic reports show that these decreases in automobile workers are about uniform throughout the industry, with the possible exception of one plant in Saginaw, Michigan, which laid off 800 employes the first of this month and which will make further reductions on the 15th.

While the automobile industry is showing a decline in workers, due primarily to the usual seasonal slackening, the tire and rubber industry, in practically all cases, report taking on an increasing number of workers and in some instances working night and day shifts.

Following is the telegraphic report received by the Employment Service relating to the automobile and tire industry:

Detroit: There is a surplus of workers in all lines of industries, more so in the automobile factories, which are working only part time.

Flint: Factories are not taking on any new workers and there is a surplus of automobile factory help. A considerable portion of the automobile workers are being absorbed in road construction work.

Lansing: A surplus of automobile workers is reported, although all plants are running, except one factory.

Saginaw: All plants are running except one motor plant, which released 800 men on the first and which has announced that additional workers will be laid off the 15th.

Racine (Wis.): There is a shortage of rubber factory workers. Practically all plants are working overtime.

Eau Claire (Wis.): A rubber company is employing day and night shifts and will continue to do so indefinitely.

Cincinnati: The automobile industry is operating about 75 per cent of capacity.

Dayton: There is a surplus of common labor. Tire plants running full time.

Toledo: There is a surplus of workers in automobile and accessory plants.

Akron: All the larger rubber factories and about 25 per cent of the smaller factories are working three shifts.

Buffalo: A large automobile building plant in Buffalo and another in Depew are temporarily closed, affecting 600 men. Two large tire plants in Kenmore and one in Buffalo show a farther gain in operations and employment over the previous month.

Syracuse: Basic industries, notably automobile plants and steel mills, continue operating on part time with reduced forces and the supply of laborers exceeds the demand.

Yonkers: The rubber industry is increasing operations and taking on more workers.

Evansville, (Ind): A surplus of workers in all industries is evident. A large truck company is working overtime.

Kokomo: With the exception of a considerable surplus of automobile workers, employment conditions are about normal. All plants are running, except an automobile factory.

Objects to Idea That Shows Are Profitable to Dealers

ST. LOUIS, Mo., Nov. 22.—John T. Salisbury, manager of the More Automobile Co., Marmon distributor in St. Louis, and chairman of the show committee of the St. Louis Auto Dealers' Association during the recent closed car show, spoke at a recent meeting of the association, protesting against the general impression that automobile shows result in large net profits to the exhibitors. Salisbury reviewed the history of the automobile shows held in St. Louis and showed that in only one instance was the rebate to the exhibitors equal to the amount paid for space. He contended that it was a mistake for the association to allow to go unchallenged the statement that shows result in profit and asserted that shows are for the benefit of the customer, to give him an opportunity of studying all makes of automobiles without the necessity of making a circuit of dealer establishments.

DISTRIBUTE DAVIS

ST. LOUIS, Mo., Nov. 24.—Distribution of the Davis line of automobiles in St. Louis has been taken over by the Ghio Motor Sales Co., 6500 Easton avenue. J. C. M. Ghio, who has been connected with the automobile industry in St. Louis for a number of years is owner of the company.

Washington Approves Automobile Reciprocity With Canada and Mexico

WASHINGTON, Nov. 22.—Automobile reciprocity between the United States and Canada and between this country and Mexico has been approved by the U. S. Department of Customs, the Treasury Department here has announced. Under the agreement between this country and Canada and Mexico tourists, for pleasure only, may spend 30 days in this country simply by securing a permit from the Collector at the frontier where he crosses. Reciprocal agreements have been secured for motorist in this country, who may travel in the two countries named for a period of 30 days.

Mercedes-Benz Merger Rumor Confirmed by Representatives

Say Combination of Foreign Organizations Will Begin Automobile Standardization in Europe

NEW YORK, Nov. 24.—Confirming a report made some time ago announcement is now made by American representatives of the merging of the Mercedes Automobile Co. and the Benz Motor Works Co. of Germany.

The announcement, issued by the American Mercedes Co., states that the combination will have a marked effect upon the American automobile industry and that it means the beginning of standardization of the automobile in Europe. As a result of the merger the purchasing power of the two companies combined will be greatly increased, it is said.

"With the amalgamation of the Mercedes Automobile Co. and the Benz Motor Works, the announcement says, 'There comes a new condition in the manufacturing and financial situation in Germany.' This is considered either a true sign of prosperity or an interesting phase in the recent adjustment of affairs in Europe.

"Involving as it does such large and old companies as the Mercedes and the Benz, the importance of the merger is bound to be felt in this country. In the first place it means the beginning of a standardization of the automobile in Europe; in the second place it means a firmer financial condition in Germany, and both are very important to America."

Officials of the Mercedes Automobile Co. have recently been in this country with a view to making purchases of required raw material.

BUILD USED CAR ROOM

ROCHESTER, N. Y., Nov. 24.—The Gallagher Motor Company, Studebaker distributors of Rochester, N. Y., recently purchased property adjoining their sales rooms on which they will erect a used car salesroom.

Under the old arrangement a bond for a sufficient amount to cover the customs duty, was necessary before cars were permitted over either border. Under the new ruling this bond is no longer necessary.

For a stay of more than 30 days, but not exceeding six months, it is necessary in order to avoid payment of the duty, to furnish a bond for the estimated duties, based on appraisement of the car by custom officers. Also a deposit of \$25 is required, which is returned upon the exportation of the car.

With the Associations

No More Car Loaning

FORT WORTH, Texas, Nov. 24.—Fort Worth dealers no longer will furnish stock cars for parades, receptions and other functions, free of charge.

That was decided at the recent meeting of the Fort Worth Automotive Trades Association. The Fort Worth dealers declared in the future when a man buys a new car from them he is going to get a new car, not one which has been used in parades, tours of the city for special visitors, and other functions attendant upon conventions and activities of any bodies.

Agree to 6-Day Week

ST. LOUIS, Mo., Nov. 24.—In order to give their sales forces a six day week, members of the St. Louis Automobile Dealers' Association have entered into a Saturday night and Sunday closing agreement.

The agreement provides that the firms signing shall close each day at 6 p. m., and all day on Sunday and that the agreement shall remain in force until such a time as the majority of those signing shall meet and cancel it.

To Hold Regional Meeting

DETROIT, Nov. 24.—The second regional meeting of the Michigan Automotive Trade Association will be held in

Kalamazoo on Dec. 2, at which A. B. C. Hardy, President of Olds Motor Works, will be the principal speaker—his topic being "The Dealer of the Future."

The meeting will be under the direction of Harry B. Parker, president, and Otis H. Boylan, secretary of the K. A. D. A., in co-operation with Richard E. Fair, Kalamazoo district director for the Michigan trade association, and C. C. Cushman, of Battle Creek, director at large for the State association in southwestern Michigan.

Invitations to more than 400 dealers in southwestern Michigan will be mailed out this week by the State and the Kalamazoo associations. The dealers invited are from counties of Allegan, Barry, Berrien, Branch, Calhoun, Cass, Eaton, Kalamazoo, St. Joseph and Van Buren.

Jobbers and Boosters Meet

NASHVILLE, Tenn., Nov. 24.—Representatives of the automobile industry recently met in Nashville for a session of the Southern Automotive Association, composed of jobbers handling supplies and accessories, also a joint meeting of the Southeastern Boosters Club. The sessions were held at Hotel Hermitage. A large banquet was given. T. M. Glasgow, of Charlotte, N. C., presided. Lawrence Hirsig was chairman of the Nashville entertainment committee.

Arrange Regional Meetings

SPRINGFIELD, Mass., Nov. 24.—To stimulate efficiency and co-operation throughout this section the Springfield Automotive Dealers' Association is arranging for a series of regional mass-meetings for Western Massachusetts dealers, to be addressed by prominent speakers.

To Speak on Clutches

CLEVELAND, O., Nov. 22.—E. E. Wemp will be the principal speaker at a meeting of the Cleveland Section, S. A. E., to be held Dec. 15, at Hotel Cleveland. Mr. Wemp's subject will relate to clutches.

Organize Bus Owners

SPARTANBURG, S. C., Nov. 24.—The South Carolina Bus Owners' Association was organized at a meeting held here. P. R. Durham of Greenville was elected president; McDuff Turner of Spartanburg, first vice-president; C. O. Thompson of Charleston, second vice-president; J. G. Brown of Newberry, third vice-president and C. T. Hayes of Hartsville, secretary and treasurer. About 30 members were enrolled. A legislative committee consisting of W. M. Shelton of Greenville, W. H. Trescott of Columbia, C. O. Thompson of Charleston and J. G. Brown of Newberry was appointed. S. A. Markell of Richmond, Va., is an honorary member of this committee.

Coming Motor Events

Automobile Shows

Baltimore.....	Jan. 17-24
Nineteenth Annual Automobile Show, Baltimore Automobile Trade Association	
Birmingham, Ala.....	Dec. 1-6
Dixie Automobile Show, Municipal Auditorium, under the auspices of Birmingham Motor Trade Association, G. P. Caldwell, Secy.	
Boston.....	March 7-14
Annual Show, Boston Automobile Dealers' Association, Chester I. Campbell, manager.	
Charlotte, N. C.....	Feb. 9-14
Fifth Annual Carolina Automobile Show, B. D. Heath, Chairman Central Committee.	
Brooklyn.....	Jan. 17-24
Annual Automobile Show Brooklyn Motor Vehicle Dealers Ass'n.	
Chicago.....	Jan. 23-31, 1925
National Automobile Chamber of Commerce.	
Chicago.....	Jan. 26-31
Twentieth Annual Automobile Salon.	
Cincinnati.....	Jan. 10-17
Cincinnati Automobile Show, Music Hall Auditorium, under the auspices of Cincinnati Automobile Dealers Association.	
Cleveland, O.....	Jan. 17-24
Annual Show, Cleveland Automobile Manufacturers' and Dealers' Assn. Public Auditorium, Herbert Buckman, Manager.	
Detroit.....	Jan. 17-24, 1925
Detroit Automobile Show, Detroit Dealers' Association.	
Kansas City, Mo.....	Feb. 7-14, 1925
Kansas City Motor Car Dealers' Association Show.	
Newark, N. J.....	Jan. 10-17, 1925
Eighteenth Annual Automobile Show, under the auspices of the New Jersey Automobile Exhibition Co., Chamber of Commerce Building, Claude E. Holgate, Manager.	
New Bedford, Mass.....	Jan. 28-31, Inc.
Annual Automobile Show given by New Bedford Trade.	
New York.....	Jan. 2-10, 1925
National Automobile Chamber of Commerce.	
Omaha, Neb.....	Feb. 16-21, 1925
Twentieth Annual Omaha Automobile Show.	
Philadelphia.....	Jan. 10-17, 1925
Twenty-fourth Annual Automobile Show, Philadelphia Automobile Trade Association, Commercial Museum.	
Pittsburgh, Pa.....	Jan. 31-Feb. 7, 1925
Twenty-ninth Annual Automobile Show, Motor Square Garden, under the auspices of the Automotive Association, Jno. J. Bell, Manager.	
San Francisco.....	Feb. 21-28, 1925
Ninth Annual Pacific Automobile Show, Exposition Auditorium, under auspices Motor Car Dealers' Association of San Francisco. G. A. Wahlgreen, Manager.	

Washington, D. C.....	Jan. 24-31
Annual Show to be held on both floors of Convention Hall under auspices Washington Automotive Trade Association. Rudolph Jose, Chairman Show Committee, 1138 Connecticut ave., Washington, D. C.	

Foreign Shows

Berlin.....	Dec. 4-14
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Conventions

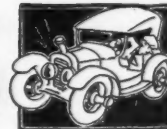
Chicago.....	Jan. 26-29, 1925
Eighth Annual Convention, N. A. D. A., Hotel LaSalle.	
Columbus, O.....	Dec. 10-11
Ohio Automotive Trade Association's annual convention.	
Detroit.....	January
Annual Meeting of the Society of Automotive Engineers.	
Montgomery, Ala.....	Jan. 26, 1925
Annual Convention, Alabama Automotive Trades Association.	
New York City.....	Jan. 7, 1925
New York Show, Convention N. A. D. A., Hotel Commodore.	

Races

Los Angeles, Cal.....	Nov. 29
Los Angeles Speedway Association—250 miles.	



SQUEEKS *and* RATTLES



Detours are so common nowadays they are accepted by tourists as a matter of course.

Don't expect your race to Success to be a continuous flight. The man who wins must always count on a number of pit stops.

Tail-Light Soliloquy

Twinkle, twinkle, little star,
How you wonder what I are,
A-shootin' beams upon the roads,
An' blindin' blinkin' hoppin' toads;
You shine some where you are at,
Like a one-eyed Thomas cat,
But you must have a little car
To twinkle for—you puny star.

As we make it out—a brass band's drum major is usually a former college cheer leader who has begun to get stiff and dignified.

What they mean in some communities by "good highway facilities" is a large supply of teamsters with strong mules.

Let your light so shine—that you won't make the other fellow take a header in the ditch.

A bumper on an automobile is like a chorus girl's costume. It protects the property without obstructing the view.

H. T. GARDNER

I notice that the "Gold Cure" is good for T. B. If T. B. means "Tough Business" I will quit being skeptical.

CAR PEDDLER

There is one line of accessories that is bound to have a "bumper" business next year. Don't call the cops, though, I'll shut up right now and keep it a secret.

OLE TIRESON

Getting down to cases—father is the one who hears most of this "Ask 'Em to Buy" stuff just before Christmas.

If automotive salesmen will only take lessons from the other members of the family on how to make the old boy come through—the Yuletide merchandising campaign will be a cinch.

One fine argument for accessories as Christmas presents for the married couple is that the nifty articles of equipment are usually fastened to the car so securely they can't possibly be thrown.

A Wisconsin motorist who stopped at a crossing out of deference to a train was bumped into the train from behind by another automobile. While badly smashed up Motorist No. 1 has the consolation of knowing that he was absolutely correct in theory.

Hunt & Dunn are not a collection agency. They operate a service station in Cochran, Pa., and they do business for cash only.

L. M. Shaw (N. A. D. A.)

"Let's Go!"



Prices and Weights of Current Passenger Car Models

Ship.	Wt.	Pass.	Body Style	Price
AMERICAN "D-66"				
2985	2-p	Roadster		\$1,950
3176	4-p	Sp. Roadster		2,050
3260	5-p	Touring		1,695
3300	5-p	Sport		1,850
3310	7-p	Touring		1,760
3190	4-p	Sp. Touring		1,885
3470	7-p	Sedan		2,550
3310	5-p	Brougham		2,195
ANDERSON "41"				
2650	5-p	Touring		\$1,195
2675	4-p	Sp. Touring		1,445
2925	2-p	Coupe		1,425
2875	5-p	Sedan		1,695
2925	5-p	Sp. Sedan		1,895
"50"				
2975	7-p	Touring		1,595
3200	7-p	Sedan		1,945
APPERSON "6"				
3100	5-p	Sp. Phaeton		\$1,695
3145	3-p	Coupe		1,935
3280	5-p	Sedan		2,095
3470	5-p	Sp. Sedan		2,295
"8"				
3815	5-p	Phaeton		2,485
3900	7-p	Phaeton		2,535
3955	5-p	Sport Phaeton		2,800
3815	7-p	Sport Phaeton		2,900
4180	5-p	Sedan		2,485
4200	7-p	Sedan		3,585
4340	5-p	Sport Sedan		3,750
4380	7-p	Sport Sedan		3,850
AUBURN "6-43"				
2610	5-p	Special Touring		1,395
2760	5-p	Sp. Touring		1,465
2900	5-p	English Coach		1,945
2885	5-p	Sedan		1,795
"8-63"				
3225	5-p	Sp. Touring		1,895
3550	5-p	Sedan		2,550
3510	5-p	Brougham		2,395
3550	7-p	Sedan		2,550
BARLEY "6" 6-50				
2750	5-p	Touring		\$1,395
2800	5-p	Sp. Touring		1,495
3100	5-p	Sedan		1,850
3150	5-p	Sp. Sedan		2,250
BUICK "Standard"				
2750	2-p	Roadster		\$1,150
2800	2-p	Roadster Encl.		1,190
2920	5-p	Phaeton		1,175
2970	5-p	Phaeton Encl.		1,250
3075	2-p	Business Coupe		1,375
3075	4-p	Coupe		1,565
3185	5-p	Dbl. Service Sedan		1,475
3245	5-p	Regular Sedan		1,665
3245	5-p	Coach		1,295
"Master (120 in. W. B.)"				
3300	2-p	Roadster		\$1,365
3455	2-p	Roadster Encl.		1,400
3455	5-p	Phaeton		1,395
3675	5-p	Phaeton Encl.		1,475
3675	4-p	Coupe		2,125
3845	5-p	Sedan		2,225
3845	5-p	Coach		1,495
(128 in. W. B.)				
3470	3-p	Sp. Roadster		\$1,750
3605	5-p	Sp. Phaeton		1,800
3645	7-p	Phaeton		1,625
3645	7-p	Phaeton Encl.		1,700
3940	5-p	Country Club		2,075
4020	5-p	Brougham Sedan		2,350
4020	7-p	Sedan		2,425
4020	7-p	Sedan Limousine		2,525
4020	7-p	Town Car		2,925
CADILLAC "V-63"				
4190	4-p	Roadster		\$3,085
4280	7-p	Touring		3,085
4200	4-p	Phaeton		3,085
4610	7-p	Sedan		3,585
4380	4-p	Victoria		3,275
4475	5-p	Landau		3,650
"Custom Built"				
4260	2-p	Coupe (132 in.)		3,975
4400	5-p	Coupe (133 in.)		4,350
4490	5-p	Sedan		4,550
4590	7-p	Suburban		4,650
4655	7-p	Imp. Suburban		4,950
CASE J. I. C.				
260	3-p	Roadster		\$1,840
290	5-p	Touring		1,885
470	5-p	Sp. Touring		2,160
570	4-p	Sub. Coupe		2,480
640	5-p	Sedan		2,590
"X"				
3020	3-p	Roadster		\$1,670
3050	5-p	Touring		1,695
3380	5-p	Sub. Coupe		2,390
3400	5-p	Sedan		2,485
Ship.	Wt.	Pass.	Body Style	Price
"Y"				
3950	7-p	Touring		2,475
4320	7-p	Sedan		3,325
CHANDLER "SS"				
3090	2-p	Roadster		\$1,795
3132	4-p	Roadster		1,785
3084	5-p	Touring		1,585
3223	7-p	Touring		1,735
3284	4-p	Royal Dispatch		1,885
3309	5-p	Chummy Sedan		2,045
3469	5-p	Met. Sedan		2,195
3428	5-p	Sedan		1,995
3521	7-p	Sedan		2,195
3598	7-p	Limousine		3,095
CHEVROLET "Superior"				
1690	2-p	Roadster		\$495
1790	5-p	Touring		510
1955	5-p	Phaeton DeLuxe		640
2005	4-p	Coupe		725
1880	2-p	Coupe DeLuxe		775
2070	5-p	Coach		695
2070	5-p	Sedan		795
2070	5-p	Sedan DeLuxe		940
CHRYSLER (112 1/4 in. W. B.)				
2805	4-p	Roadster		\$1,625
2730	5-p	Touring		1,395
2785	5-p	Phaeton		1,495
2935	4-p	Coupe		1,895
3060	5-p	Sedan		1,825
3085	5-p	Imperial Sedan		2,065
3090	5-p	Crown Sedan		2,195
3995	5-p	Brougham		1,965
(118 1/4 in. W. B.)				
3090	5-p	Town Car		3,725
CLEVELAND "43"				
2750	5-p	Touring		1,095
2810	5-p	Touring De Luxe		1,195
2880	3-p	Coupe		1,295
2870	3-p	Spec. Coupe		1,395
3040	5-p	Spec. Sedan 4 d.		1,495
3090	5-p	Sedan de Luxe		1,695
2930	5-p	Brougham		1,545
COLE MASTER				
3675	4-p	Volante Tour.		\$2,325
3795	7-p	West. Tour.		2,325
3675	4-p	Aero-Vol. Tour.		2,475
4055	5-p	Brouette Sedan		3,225
4000	7-p	Royal Sedan		3,225
4100	7-p	Royal Limousine		3,325
CUNNINGHAM "V-4"				
4600	7-p	Touring		\$6,300
4500	4-p	Sp. Touring		5,800
4700	4-p	Coupe		7,150
5000	6-p	Sedan		7,650
DAGMAR "6-70"				
3800	4-p	Sp. Touring		\$3,500
4200	4-p	Sedan		4,500
DANIELS "24-38"				
4150	4-p	Touring		\$6,800
4765	7-p	Touring		6,900
4600	4-p	Sedan		7,600
5200	7-p	Sedan		7,800
DAVIS "90"				
2650	4-p	M. O'War Road.		\$1,495
2915	4-p	Legionaire Tour.		1,495
2750	5-p	Phaeton		1,395
3070	5-p	Sedan		1,995
3065	5-p	P-line Sedan		1,995
2700	5-p	Brougham		1,595
"91"				
2835	4-p	Roadster		1,795
3020	5-p	Phaeton		1,695
3245	5-p	Sedan		2,295
3050	5-p	Brougham		1,895
3215	5-p	Berline Sedan		2,295
DODGE BROTHERS				
2494	2-p	Roadster		\$865
2653	2-p	Spec. Roadster		965
2591	5-p	Touring		895
2755	5-p	Spec. Touring		995
2755	2-p	Coupe "B"		1,035
2865	2-p	Spec. Coupe "B"		1,135
2793	4-p	Coupe		1,375
2929	4-p	Spec. Coupe		1,475
3050	5-p	Sedan B		1,250
3150	5-p	Spec. "B" Sedan		1,350
3098	5-p	Sedan A		1,385
3190	5-p	Spec. "A" Sedan		1,485
Ship.	Wt.	Pass.	Body Style	Price
"6-80"				
4120	4-p	Pasadena Tour.		\$4,150
4115	7-p	Touring		3,950
4193	4-p	Coupe		4,985
4200	5-p	Sedan		5,550
4810	7-p	Sedan		5,800
DUESENBERG				
3920	3-p	St. "8" Roadster		\$6,500
3700	5-p	Phaeton		6,250
3920	7-p	Phaeton		6,750
3980	4-p	Sp. Phaeton		6,500
4000	4-p	Coupe		7,500
4350	7-p	Sedan		7,800
DU PONT "C"				
3300	2-p	Roadster		\$2,090
3400	5-p	Touring		2,090
3600	5-p	Touring Sedan		3,050
3600	5-p	Suburban Sedan		3,050
DURANT "A-22"				
2235	2-p	Roadster		\$1,080
2325	5-p	Touring		890
2345	5-p	Touring F.W.B.		940
2395	5-p	Sp. Touring		1,140
2495	4-p	Coupe		1,340
2405	2-p	Business Coupe		1,035
2605	5-p	Spec. Coupe		1,410
2770	5-p	Sedan		1,365
2550	5-p	Spec. Sedan		1,550
2550	5-p	Coach		1,185
2550	5-p	Spec. Coach		1,250
ELCAR "4-40-41"				
2560	5-p	Touring		\$995
2585	5-p	Demi Sp. Touring		1,095
2641	5-p	Sportster		1,195
2900	5-p	Sedan		1,495
2981	5-p	Sp. Sedan		1,695
2779	5-p	Brougham 3 d.		1,265
2829	5-p	Sp. Brough. 3 d.		1,395
"6-50-51"				
2600	5-p	Demi Sp. Tour.		\$1,220
2690	5-p	Sp. Touring		1,420
2900	5-p	Sedan		1,720
2981	5-p	Sp. Sedan		1,920
2779	5-p	Brougham		1,490
2829	5-p	Sp. Brougham		1,620
"6-61"				
2007	5-p	Touring		\$1,585
3380	5-p	Sedan		2,245
3675	5-p	Sp. Sedan		2,395
3880	4-p	Brougham		1,995
"8-80"				
3-p	Roadster			2,315
5-p	Sp. Touring			2,165
7-p	Sp. Touring			2,265
7-p	Sedan			2,765
ESSEX				
2130	5-p	Touring		\$900
2305	5-p	Coach		945
FLINT "55"				
3095	3-p	Sp. Roadster		\$1,630
3145	5-p	Touring		1,495
3165	5-p	Sp. Touring		2,050
3165	4-p	Sp. Touring		1,795
3355	4-p	Coupe		2,095
3470	4-p	Sedan		2,185
"40"				
2400	5-p	Touring		1,075
2720	5-p	Brougham		1,640
FORD				
Without Starter and Dem. Rims				
1395	2-p	Runabout		\$265
1517	5-p	Touring		295
With Starter and Dem. Rims				
1540	2-p	Runabout		\$350
1662	5-p	Touring		380
1772	2-p	Coupe		525
1950	5-p	Sedan, Fordor		685
1898	5-p	Sedan, Tudor		590
FRANKLIN "10 C"				
2580	5-p	Touring		\$1,950
2710	4-p	Coupe		2,750
2730	5-p	Sedan		2,850
2655	5-p	Demi-Sedan		2,250
2765	5-p	Brougham		2,850
2765	5-p	Touring Lim.		2,950
GARDNER "Series 5"				
2520	3-p	Roadster		\$ 945
2545	3-p	Spec. Roadster		1,045
2550	3-p	Radio Roadster		1,135
2555	5-p	Touring		995
2610	5-p	Special Touring		1,095
2650	5-p	Touring DeLuxe		1,145
2590	5-p	Touring "A"		1,045
2750	5-p	Radio Touring		1,145
2680	5-p	Coupe		1,275
2895	5-p	Sedan		1,475
3070	5-p	Sp. Sedan		1,595
Ship.	Wt.	Pass.	Body Style	Price
"O"				
1755	5-p	Touring		\$630
1785	2-p	Coupe		750
1880	3-p	Coupe		845
2030	5-p	Sedan		895
2130	5-p	Sport Sedan		995
2130	5-p	Sp. Sedan		995
H C S				
"6"				
3750	4-p	Touring		\$2,650
3950	4-p	Coupe		3,350
4010	4-p	Sedan		3,350
HATFIELD				
"6-55"				
3080	4-p	Sport Touring		\$1

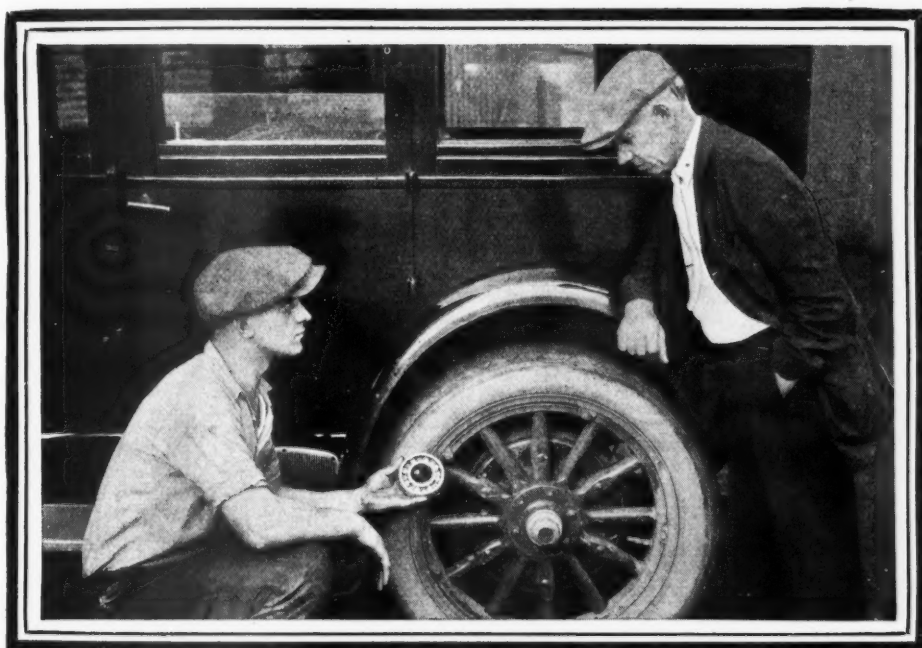
Prices and Weights of Current Passenger Car Models

Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	Ship.	Wt.	Pass.	Body Style	Price	
LINCOLN					OLDSMOBILE					REVERE					Special Six					
4050	2-p		Roadster	\$4,000	2145	2-p		Roadster	\$875	3700	2-p		Roadster	\$3,200	3065	3-p		Roadster	1,450	
4290	7-p		Touring	4,000	2270	2-p		Sp. Roadster	985	3500	4-p		Speedster	3,200	3475	5-p		Touring	1,495	
4215	4-p		Phaeton	4,000	2200	5-p		Touring	875	3800	5-p		Touring	3,200	3675	4-p		Victoria	2,050	
4380	5-p		Coupe	4,600	2360	5-p		Sp. Touring	1,015	4300	5-p		Sedan	4,000	3855	5-p		Sedan	2,150	
4375	4-p		Sedan	4,800	2330	2-p		Bus. Coupe	1,045	RICKENBACKER					Big Six					
4600	5-p		Sedan	4,900	—	5-p		Coach	1,065	2815	3-p		Sp. Roadster	\$1,645	3785	7-p		Touring	1,875	
4660	7-p		Sedan	5,100	2460	4-p		Coupe	1,175	2880	5-p		Sp. Touring	1,595	4030	5-p		Coupe	2,650	
4720	7-p		Limousine	5,300	2410	5-p		Coach	1,065	3050	4-p		Coupe	2,095	4150	7-p		Sedan	2,785	
LOCOMOBILE					2570	5-p		Sedan	1,250	3160	5-p		Sedan	2,195	4200	7-p		Berline	2,860	
"48"					2740	5-p		DeLuxe Sedan	1,350	"C"					STUTZ					
5030	4-p		Sportif Tour.	\$7,400	OVERLAND					3326	4-p		Sport Phaeton	\$2,195	"693-4"					
5330	7-p		Touring	7,400	"91" (100 in. wheelbase)					3440	4-p		Coupe	2,695	Roadster, On Appl.					
5600	5-p		Victoria Sedan	9,990	1769	2-p		Roadster	\$530	3585	5-p		Sedan	2,795	Touring, On Appl.					
5464	7-p		Brougham	9,990	1863	5-p		Touring	530	ROAMER					Sedan, On Appl.					
5640	7-p		Tour. Limousine	9,900	1918	5-p		Touring DeLuxe	595	"6-54-E" (118 in. W. B.)					3900	5-p		Sportster, On Appl.		
5668	7-p		Encl. Drive Lim.	9,990	2177	2-p		Coupe	695	3100	2-p		Roadster	\$2,685	3950	7-p		Touring, On Appl.		
5624	7-p		Cabriolet	10,250	2130	5-p		Sedan	850	3100	4-p		Tourer	2,485	4150	5-p		Sedan, On Appl.		
McFARLAN					2004	5-p		Coupe Sedan	585	3300	4-p		Sp. Touring	2,750	4350	7-p		Sedan, On Appl.		
"6" TV					PACKARD					"6-54-E" (138 in. W. B.)					4450	7-p		Berline, On Appl.		
4600	2-p		Roadster	\$5,400	"6" (126 in. W. B.)					4100	5-p		Spec. Sedan	\$4,250	TEMPLAR					
4600	4-p		Sport Touring	5,600	8165	4-p		Roadster	\$2,785	4200	7-p		Suburban-Sedan	3,950	3300	4-p		Suburban Tour.	\$2,175	
4700	7-p		Touring	5,700	8320	5-p		Touring	2,585	"4-75-E"					3300	5-p		Phaeton	1,985	
4900	4-p		Coupe	6,720	8255	4-p		Sp. Touring	2,750	3650	4-p		Sport	3,650	Sedan					2,785
5200	4-p		Tour. Sedan	6,720	8400	4-p		Coupe	3,275	"4-85-E"					2780	5-p		Touring	\$1,095	
5200	7-p		Tour. Sedan	6,810	8615	5-p		Coupe	3,450	ROLLIN					3110	5-p		Sedan	1,595	
5200	7-p		Sp. Sedan	6,600	8665	5-p		Sedan	3,375	2300	5-p		Touring	\$995	Royal Sedan					1,895
5200	7-p		Sub. Sedan	7,000	8610	5-p		Sedan Limousine	3,425	2315	3-p		Coupe Roadster	1,195	2840	5-p		Touring	\$1,250	
5100	7-p		Limousine	6,900	8430	7-p		Touring	\$2,785	2425	3-p		Spec. Coupe	1,395	3025	5-p		Club Phaeton	1,425	
5200	7-p		Town Car	9,000	8690	7-p		Sedan	3,625	2485	5-p		Sedan	1,295	3340	5-p		Royal Sedan	1,925	
"Light 6" SV					8765	7-p		Sedan Limousine	3,675	2595	5-p		Spec. Sedan	1,550	3100	5-p		Sedan	1,675	
5700	3-p		Roadster	\$2,600	"8" (136 in. W. B.)					ROLLS ROYCE					3083	5-p		Coach Sedan	1,425	
5700	5-p		Touring	2,600	8880	4-p		Runabout	3,850	Prices on application to Rolls-Royce Co. of America, Springfield, Mass.					WESTCOTT					
5850	4-p		Coupe	3,100	8990	5-p		Touring	3,650	STANLEY					3050	5-p		Touring	\$1,690	
4850	5-p		Sedan	3,100	9130	4-p		Sp. Touring	3,800	3770	5-p		Phaeton	\$2,750	3150	5-p		Spec. Touring	1,840	
4900	7-p		Sedan	3,200	4125	4-p		Coupe	4,550	3910	7-p		Phaeton	2,750	3300	5-p		Brougham 3 d.	2,290	
MARMON					4200	5-p		Coupe	4,725	4075	5-p		Sedan	3,585	"48"					
3470	2-p		Roadster	\$3,165	4270	5-p		Sedan	4,650	4170	7-p		Sedan	3,985	3550	7-p		Touring	\$1,990	
3575	5-p		Phaeton	3,165	4275	5-p		Sedan Limousine	4,700	STAR					3650	7-p		Spec. Touring	2,190	
3690	7-p		Touring	3,165	4020	7-p		Touring	\$3,850	1700	2-p		Roadster	\$540	"68"					
3770	5-p		Brougham Coupe	3,165	4275	7-p		Sedan	4,900	1790	5-p		Touring	540	3300	5-p		Sedan	\$2,190	
"4-d"					4350	7-p		Sedan Limousine	4,950	1800	5-p		Touring FWB	745	WILLS SAINT-CLAIRE					
3970	5-p		Sedan	3,295	4350	7-p		Sedan Limousine	4,950	1880	5-p		Spec. Touring	795	"A-68" (121 in. W. B.)					
3970	5-p		Sedan de Luxe	3,775	4350	7-p		Sedan Limousine	4,950	1980	2-p		Coupe	750	3240	3-p		Roadster	\$2,575	
4155	7-p		Sedan de Luxe	3,850	4350	7-p		Sedan Limousine	4,950	2115	5-p		Sedan	820	3320	5-p		Touring	2,475	
4000	5-p		Sedan Limousine	3,900	4350	7-p		Sedan Limousine	4,950	2150	5-p		Spec. Sedan	1,090	3460	4-p		Coupe	3,275	
4100	7-p		Sedan Limousine	3,975	4350	7-p		Sedan Limousine	4,950	STEARNS-KNIGHT					3630	7-p		Sedan	3,475	
MAXWELL					PAIGE					"B" (4)					3670	5-p		Imperial Sedan	3,575	
2135	2-p		Roadster	\$885	3677	4-p		Phaeton	\$1,895	3775	4-p		Coupe Roadster	\$1,795	3500	5-p		Brougham	3,375	
2210	5-p		Touring	895	3742	7-p		Phaeton	1,895	4250	5-p		Sedan	1,595	3650	5-p		Limousine	3,850	
2410	5-p		Sp. Touring	1,055	3880	4-p		Phaeton DeLuxe	2,095	3750	4-p		Coupe Brougham	1,895	3600	5-p		Town Car	3,850	
2255	2-p		Club Coupe	1,025	4300	7-p		Sub. Limousine	2,895	4250	5-p		Brougham	2,095	"B-68" (127 in. W. B.)					
2440	5-p		Club Sedan	1,095	3900	5-p		Brougham 4 d.	2,175	4275	4-p		Sp. Coupe	3,150	3265	4-p		Roadster	\$2,875	
2595	5-p		Sedan	1,345	4285	7-p		Sedan DeLuxe	2,770	4275	5-p		Sedan	2,945	3335	5-p		Traveler	2,975	
2785	5-p		Trav. Sedan	1,585	PEERLESS					4025	2-p		Coupe	3,395	3500	7-p		Phaeton	2,875	
MOON					"6-70"					4275	4-p		Sp. Coupe	3,150	3495	4-p		Coupe	3,675	
2440	5-p		Series "A"		8050	2-p		Roadster	\$2,350	4275	5-p		Sedan	2,945	3625	5-p		Sedan	3,775	
2460	5-p		Sp. Touring	1,195	8175	5-p		Touring	2,285	4275	7-p		Sp. Sedan	3,395	3635	7-p		Sedan	3,800	
2605	5-p		Enc. Touring	1,270	8525	7-p		Touring	2,485	4275	7-p		Sp. Sedan	3,395	3570	5-p		Brougham 4-D	\$3,800	
2605	5-p		Sedan 2 d	1,495	8550	5-p		Sedan	2,995	4275	7-p		Sp. Sedan	3,395	3710	7-p		Limousine	3,900	
2755	5-p		Sedan 4 d	1,695	8700	5-p		Coupe	2,950	4275	7-p		Sp. Sedan	3,395	WILLIS-KNIGHT					
2755	5-p		Petite Sedan	1,785	8900	7-p		Sedan	3,295	4275	7-p		Sp. Sedan	3,395	"64"					
Newport					Equiposed "8"					4275	7-p		Sp. Sedan	3,395	2681	2-p		Roadster	\$1,275	
2760	5-p		Touring	1,495	4355	7-p		Tour. Phaeton	3,285	4275	7-p		Sp. Sedan	3,395	2768	5-p		Touring	1,295	
2920	5-p		Sedan	1,815	4355	7-p		Town Brougham	4,250	4275	7-p		Sp. Sedan	3,395	3062	3-p		Coupe	1,770	
3090	5-p		Petite Sedan	1,915	1300	5-p		Town Sedan	4,250	4275	7-p		Sp. Sedan	3,395	3115	5-p		Sedan	1,795	
Metropolitan					4355	7-p		Sedan	4,450	4275	7-p		Sp. Sedan	3,395	3115	5-p		Coupe Sedan	1,550	
2860	5-p		Touring	1,515	4430	7-p		Berline	4,725	4275	7-p		Sp. Sedan	3,395	3115	5-p		Coupe Sedan	1,550	
3120	5-p		Sedan	1,995	4130	4-p		Victoria Coupe	3,950	4275	7-p		Sp. Sedan	3,395	3115	5-p		Coupe Sedan	1,550	
3190	5-p		Sp. Sedan	2,095	4355	7-p		Coupe	4,175	4275	7-p		Sp. Sedan	3,395	3167	5-p		Sedan DeLuxe	1,995	
London					PIERCE-ARROW					"C" (6)					"67"					
3270	5-p		Sp. Touring	1,985	4350	2-p		Runabout	\$5,250	4200	2-p		Sp. Touring	\$2,250	3050	7-p		Touring	1,425	
3590	5-p		Petite Sedan	2,540	4590	5-p		Touring	5,250	4400	7-p		Phaeton	2,150	3431	7-p		Sedan	2,095	
NASH					4780	3-p		Coupe	6,800	4200	2-p		Sp. Touring	2,150	TAXICABS					
2960	5-p		Touring	\$1,095	4830	4-p		Sedan	6,900	4400	7-p		Touring	2,400	3360			Make and Model	Price	
3120	5-p		Sedan	1,295	4960	7-p		Sedan	7,000	4400	7-p		Coupe Roadster	3,100	4100			Ambassador D-1	\$1,695	
"Advanced"					4750	4-p		Coupe Sedan	6,900	4400	7-p		Sedan	2,800	4200			Checker	2,340	
(121 in. W. B.)					4730	6-p		Brougham	6,800	4400	7-p		Sedan	2,800	4300			Delco	1,000	
3320	3-p		Roadster	1,375	4850	7-p		Limousine	7,000	4400	7-p		Sp. Brougham	2,750	4415			Delco A	1,000	
3400	5-p		Touring	1,375	5060	7-p		Enclosed Lim.	7,000	4400	7-p		Brougham	3,200	4500			Delco B	1,000	
3680	5-p		Sedan	1,695	4780	7-p		French Lim.	7,000	4400	7-p		Brougham	3,200	4500			Delco C	1,000	
"Advanced"					4732	6-p		Landaulet	7,000	4400	7-p		Brougham	3,200	4500			Delco D	1,000	
(127 in. W. B.)					"80"					STEVENS-DURYEA					4500			Delco E	1,000	
3480	7-p		Touring	1,525	3385	7-p		Phaeton	\$2,895	4200	2-p		Roadster	\$8,150	4500			Delco F	1,000	
3830	7-p		Sedan	2,290	3440	5-p		Sedan	3,895	4400	7-p		Touring	7,500	4500			Delco G	1,000	
3750	5-p		Coupe 4 d.	2,190	3625	7-p		Sedan	3,995	4200	2-p		Sp. Touring	7,750	4500			Delco H	1,000	
OAKLAND					3675	7-p		Enc. Drive Lim.	4,045	4400	7-p		Coupe	9,000	4500			Delco I	1,000	
"6-54"					REO					"T-6"					4600	4-p		Sedan	10,000	
2420	3-p		Roadster	\$1,095	8172	5-p		Sta. Touring	\$1,395	4800	6-p		Town Brougham	10,175	4500	6-p		Sedan	9,675	
2510	3-p		Sp. Roadster	1,195	8182	5-p		Sport Touring	1,595	4800	6-p		Vestibule Limou.	9,675	480					

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

MAKE AND MODEL		TIRES		Ballon Equipment	ENGINE										Electrical System		Clutch	Gear-set	Uni- versal Joints	REAR AXLE		BRAKES			Steering Gear	Rear Springs
		Wheelbase (Ins.)	Standard Size (Ins.)		Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make				Make	Type and Make	Type and Make	Gear Ratio	Foot, Type and Location		
American.....D-66	127	33x4 1/2	No	H-Sp	91	6-3 1/2 x 5	29.40	L	C	3	PS	Str	A-K	G-D	P-B&B	War	M-Har	F-Sal	5.10	E-R	I-R	None	Lav	S-57 1/2		
Anderson.....41	115	31x5.2	Yes	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Zen	Wes	Wes	P-B&B	Dur	F-Thi	1/2 Sal	4.75	E-R	E-T	Mec*	Gem	S-58		
Anderson.....50	122	32x4.9	Yes	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Zen	Rem	Rem	P-B&B	Dur	F-Uni	3/4 Sal	4.50	E-R	E-T	Mec*	Gem	S-58		
Apperson.....6	120	32x4	Yes*	Own	6	6-3 1/2 x 4 1/2	23.44	L	C	4	FP	Str	Rem	Rem	P-Roc	Mec	M-Thi	1/2 Col	5.10	E-R	I-R	Mec*	Own	J-48		
Apperson.....8	130	33x5	No	Own	8	8-3 1/2 x 5	33.80	L	C	3	PS	Joh	Rem	Bij	D-Own	Mec	M-Thi	1/2 Own	4.25	E-R	I-R	Mec*	Lav	J-48		
Auburn.....6-43	114	31x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	1/2 Col	4.63	E-R	E-T	Mec*	Jac	S-57		
Auburn.....8-63	124	32x6.2	Yes	Lyc	H	8-3 1/2 x 4 1/2	31.25	L	C	5	PC	Str	Rem	Rem	P-B&B	W-G	M-Uni	1/2 Col	4.63	E-R	E-T	Mec*	Jac	S-57		
Barley.....6-50	118	32x4	No	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	Del	Del	P-B&B	Ful	R-M&E	1/2 Col	5.11	E-R	I-R	None	Jac	S-56		
Buick....."Standard"	114 3/4	31x4.7	Yes	Own	Sta	6-3 1/2 x 4 1/2	21.60	L	C	4	PS	Mar	Del	Del	D-Own	Own	M-Own	3/4 Own	4.90	E-F	I-R	None	Jac	V-48		
Buick....."Master"	120	32x5.7	Yes	Own	6	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Mar	Del	Del	D-Own	Own	M-Own	F-Own	4.73	E-F	I-R	Mec	Jac	V-47 1/2		
Cadillac.....V-63	132	33x5	Yes*	Own	63	8-3 1/2 x 5 1/2	31.25	L	C	3	PC	Own	Del	Del	D-Own	Own	M-Spi	F-Own	4.50	B-F	I-R	Mec	Own	N-54		
Case.....X	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	1/2 Col	4.90	E-R	I-R	Hyd*	Jac	S-55		
Case.....JIC	122	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	1/2 Col	4.90	E-R	I-R	Hyd*	Lav	S-54 1/2		
Case.....Y	132	33x5	Yes*	Cont	6T	6-3 1/2 x 5	33.75	L	C	4	PC	Sch	Del	Del	D-Own	Own	R-Sne	3/4 Col	4.45	E-R	I-R	Hyd*	Lav	S-57		
Chandler.....SS	132	33x6.0	Yes	Own	6	6-3 1/2 x 5	29.40	L	C	4	PC	Sch	Bos	Bos	P-B&B	Own	M-The	F-Own	4.45	E-R	E-T	Mec*	Own	S-58 1/2		
Chevrolet.....Superior	103	30x3 1/2	No	Own	Sup	4-3 1/2 x 4	21.76	L	C	3	PS	Zen	Rem	Rem	K-Own	Own	M-Own	1/2 Own	3.77	E-R	I-R	None	Own	Q-28		
Chrysler.....Six	112 3/4	30x5.7	Yes	Own	Six	6-3 x 4 3/4	21.60	L	A	7	FP	Bal	Rem	Rem	D-Own	Own	M-Own	1/2 Own	4.60	E-F	E-T	Hyd	Jac	S-53		
Cleveland.....43	127	31x5.2	Yes	Own	43	6-3 1/2 x 4 1/2	23.44	L	C	3	PC	Sch	Bos	Bos	P-B&B	Own	R-Sne	1/2 Own	4.90	E-R	E-T	Mec*	CAS	S-53		
Cole.....Master	127	31x7.3	Yes	Nort	311	8-3 1/2 x 4 1/2	39.20	L	A	3	PC	Sch	Del	Del	D-Nor	Nor	M-Spi	F-Col	4.10	E-R	I-R	None	Gem	S-57		
Crawford.....6-70	138	33x4 1/2	No	Cont	6T	6-3 1/2 x 5 1/2	31.54	L	C	4	PC	Zen	Wes	Bos	D-B-L	B-L	M-Spi	1/2 Tim	5.00	E-R	I-R	None	Lav	S-		
Cunningham.....V4	142	33x5	No	Own	V4	8-3 1/2 x 5	45.00	L	C	3	FP	Zen	Del	Del	D-Own	Own	R-Sne	F-Tim	4.23	E-R	I-R	None	Gem	J-62		
Dagmar.....6-70	138	33x5	No	Cont	6T	6-3 1/2 x 5 1/2	31.54	L	C	4	PC	Zen	Wes	Bos	D-B-L	B-L	M-Spi	1/2 Tim	5.00	E-R	I-R	None	Lav	S-		
Daniels.....24-38	138	33x5	Yes*	Own	24-38	8-3 1/2 x 5 1/2	39.20	L	C	3	PC	Zen	Del	Del	P-Own	Own	M-Spi	F-Tim	4.23	E-R	I-R	None	Ros	S-		
Davis.....90	115	31x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	1/2 Tim	5.10	E-F	I-R	Hyd	Ros	S-52		
Davis.....91	118	32x4 1/2	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	5	PC	Str	Del	Del	P-B&B	W-G	M-Pet	1/2 Tim	5.10	E-F	I-R	Hyd	Ros	S-52		
Dodge Brothers.....	116	32x4	No	Own	D	4-3 1/2 x 3 1/2	24.03	L	A	3	PS	Ste	N.E	N.E	D-Own	Own	M-Own	1/2 Own	4.54	E-R	I-R	None	Own	S-55		
Dorris.....	132	32x5	Yes*	Own	6-80	6-4 x 5	38.40	L	C	7	PC	Str	Bos	Bos	D-Own	Own	B-L	1/2 Tim	3.77	E-R	I-R	None	Ros	S-60		
Duesenberg Straight.....8	134	33x5	Yes*	Own	8	8-2 1/2 x 5	26.45	L	A	3	PC	Str	Del	Del	P-Own	Own	R-Chi	1/2 Own	4.90	I-F	E-T	Hyd	Ros	S-59		
Dupont.....C	124	32x4 1/2	No	H-Sp	90	6-3 1/2 x 5	29.40	L	C	3	PS	Str	Wes	Wes	D-B-L	B-L	M-Spi	F-Col	4.45	E-R	I-R	None	Jac	S-58		
Durant.....A-22	109	31x4	Yes*	Cont	Spec	4-3 1/2 x 4 1/2	24.03	L	A	3	PC	Til	A-L	A-L	P-Own	War	M-Spi	3/4 Ad	4.33	E-R	I-R	Mec*	War	S-50 1/2		
Elcar.....4-41	112	31x4	Yes*	Lyc	CF	4-3 1/2 x 5	21.03	L	A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	1/2 Sal	4.70	E-R	E-T	Mec*	Ros	S-51		
Elcar.....6-51	113	31x4	Yes*	Cont	7U	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Str	A-L	A-L	P-B&B	W-G	M-Mec	1/2 Sal	4.70	E-R	E-T	Mec*	Ros	E-51		
Elcar.....6-61	118	32x4	Yes*	Cont	8R	6-3 1/2 x 4 1/2	27.34	L	C	4	PC	Str	Del	Del	P-B&B	W-G	M-Har	3/4 Sal	4.70	E-R	E-T	Mec*	Ros	S-52		
Elcar.....8-80	127	32x6.2	Yes	Lyc	H	8-3 1/2 x 4 1/2	31.25	L	C	5	PS	Str	Del	Del	P-B&B	W-G	M-Spi	3/4 Sal	4.71	E-F	E-T	Hyd	Ros	S-58		
Essex.....6	110 1/2	31x5.2	Yes	Own	6	6-2 1/2 x 4 1/2	17.32	L	A	3	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	1/2 Own	5.60	E-R	I-R	None	Own	S-54 1/2		
Flint.....40	115	30x5.2	Yes	Cont	40	6-3 1/2 x 4 1/2	23.44	L	C	4	PC	Til	A-L	A-L	P-Own	War	M-Spi	1/2 Ad	4.77	E-F	E-F	Mec	War	S-50		
Flint.....53	120	32x4 1/2	Yes*	Cont	55	6-3 1/2 x 5	27.34	L	C	7	PC	Str	DeJ	DeJ	P-Own	War	M-Spi	1/2 Ad	4.77	E-R	I-R	Hyd*	War	S-54		
Ford.....T	100	30x3 1/2	No	Own	T	4-3 1/2 x 4	22.50	L	C	3	Sp	Str	Own	Own	D-Own	Own	M-Own	1/2 Own	3.63	E-T	I-R	None	Own	O-43 1/2		
Franklin.....10 C	115	32x4.9	Yes	Own	10-C	6-3 1/2 x 4	25.35	L	A	7	PC	Str	A-K	A-K	P-M&E	Own	M-Spi	1/2 Own	4.73	E-T	E-R	None	Own	E-38		
Gardner.....Series 5	112	32x4	Yes*	Lyc	CE	4-3 1/2 x 5	21.76	L	A	5	PC	Zen	Wes	Wes	P-B&B	Mec	M-Pet	3/4 Fli	4.80	I-R	I-R	None	Ros	S-51		
Gray.....O	104	30x3 1/2	Yes*	Own	R	4-3 1/2 x 4	21.03	L	C	3	Sp	Sec	Wes	Wes	P-Own	Det	R-Sne	1/2 Tim	3.90	I-R	I-R	None	Own	Q-30		
H.C.S.....Series 6	126	32x5	Yes*	Own	6	6-3 1/2 x 5	29.40	L	C	3	FP	Str	Del	Del	D-B-L	B-L	M-Spi	3/4 Own	4.63	I-R	I-R	None	Gem	S-56		
Hatfield.....6-55	121	32x4	No	H-Sp	40	6-3 1/2 x 5	25.35	L	C	3	PS	Str	Bos	Bos	P-B&B	Dur	M-Spi	1/2 Col	4.63	E-R	I-R	None	Gem	S-58		
Haynes.....10	121	33x5.7	Yes	Own	60	6-3 1/2 x 4 1/2	29.40	L	C	3	PS	Ray	Kin	L-N	D-Own	Mec	M-Thi	1/2 Own	4.41	E-R	E-T	None	Jac	S-54 1/2		
Hudson.....Super 6	127	33x6.2	Yes	Own	6	6-3 1/2 x 5	29.40	L	A	4	Sp	Ste	Bos	Bos	D-Own	Own	M-Spi	1/2 Own	4.45	E-R	I-R	None	Gem	S-58		
Hupmobile.....Series R	115	32x4	Yes*	Own	R	4-3 1/2 x 5 1/2	16.90	L	C	3	PC	Str	Wes	Wes	D-Lon	Own	R-Own	3/4 Own	4.87	E-R	I-R	None	Ros	S-56 1/2		
Jewett.....SR	112	32x4.9	Yes	Own	6	6-3 1/2 x 5	25.36	L	C	3	PC	Ray	A-K	Rem	D-Lon	W-G	M-Mec	1/2 Tim	4.45	E-R	E-T	None	Gem	S-54		
Jordan.....K&L	120	32x4	Yes*	Cont	Spec	6-3 1/2 x 4 1/2	26.31	L	C	4	PC	Str	Del	Del	P-Det	Det	M-Thi	1/2 Tim	4.45	E-F	I-R	Hyd	Gem	S-55 1/2		
Jordan....."A"	125 1/2	32x6.2	Yes	Cont	Spec	8-3 x 1 1/2	28.60	L	C	5	PC	Str	Bos	Bos	P-Det	Det	M-Thi	1/2 Tim	4.45	I-F	E-T	Hyd	Gem	S-55 1/2		
King.....L&K	120	32x4 1/2	No	Own	L	8-3 x 5	28.80	L	C	3	PS	Bal	A-K	W												



Double-acting thrust bearing, flat seats (grooved races) 2100-F Series



Single-acting thrust bearing, flat seats (grooved races) 1100-F Series



Single-acting, self-aligning thrust bearing 1100 Series



Single-acting, self-aligning thrust bearing, levelling washer, 1100-U Series



Double-acting, self-aligning thrust bearing, levelling washers 2100-U Series

The right bearings for replacements

STROM Ball Bearings are standard equipment on many leading cars and trucks. They are standardized as to sizes and types, so they can be used for replacements on any automobile.

When a car or truck comes to you for bearing replacements use Strom Ball Bearings. Your customers will thank you because this installation will end their bearing troubles.

Records of many years prove that Strom Ball Bearings give satisfaction,

long life and economical service.

They are built to bear the brunt of hard service. Made of the finest special alloy steel, they are hardened throughout, insuring proper density, hardness, elasticity and durability.

These are facts you should know. Service that gives satisfaction wins you friends and customer confidence. So Strom Ball Bearings are trade-builders for you.

There is a Strom distributor near you. Phone him your needs.

Strom

BALL BEARINGS

STROM BALL BEARING MFG. CO.

Formerly U. S. Ball Bearing Mfg. Co.

4551 Palmer Street, Chicago, Ill.



Single-row deep-groove Standard type, radial bearing



Double-row, deep-groove Standard type, radial bearing



Angular contact bearing, combination radial and thrust



Double-row, maximum type, radial bearing



Single-row, maximum type, radial bearing

Current Passenger Car Specifications

(This list comprises cars distributed on a national basis)

[MAKE AND MODEL	Wheelbase (Ins.)	TIRES		ENGINE										Electrical System		Clutch	Gear-set	Universal Joints	REAR AXLE		BRAKES				Steering Gear	Rear Springs
		Standard Size (Ins.)†	Ballon Equipment	Make	Model	Number of Cylinders, Bore and Stroke (Ins.)	Rated Horsepower, N.A.C.C.	Valve Arrangement	Piston Material	Number of Main Crankshaft Bearings	Oiling System	Carburetor Make	Ignition System Make	Generator and Starter Make	Type and Make				Make	Type and Make	Type and Make	Gear Ratio†	Foot, Type and Location	Hand, Type and Location		
Paige Peerless.....70	131	33x4½	Yes*	Cont	Spec	6-3½x5	33.75	L C	4	PC	Ray	A-K	Rem	D-Lon	W-G	M-Mec	½ Tim	4.90	E-R	I-R	None	Gem	8-61½			
	126	33x6.2	Yes	Own	70	6-3½x5	29.40	L C	7	PC	Joh	Del	Del	D-Own	Own	M-Spi	½ Tim	4.66	E-F	I-R	Hyd	Gem	8-54			
	133																									
Peerless, Equipped "8"	128	33x6.6	Yes	Own	66	8-3½x5	33.80	L C	3	PC	Str	Own	Del	D-Own	Own	M-Spi	½ Tim	4.90	E-R	I-R	Hyd	Gem	8-60			
Pierce-Arrow.....33	138	33x5	No	Own	33	6-4 x5½	38.10	T C	7	FP	Own	Del	Del	D-Own	Own	M-Spi	½ Tim	4.29	E-R	I-R	Mec*	Gem	8-50			
Pierce-Arrow....."80"	130	32x5.7	Yes	Own	"80"	6-3½x5	29.40	L C	7	PC	Own	Del	Del	P-B&B	B-L	M-Spi	½ Tim	4.45	I-F	I-R	Mec	Gem	8-56½			
Reo.....T6	120	32x6	Yes	Own	T6	6-3½x5	24.34	G A	4	PS	Sch	NE	NE	D-Own	Own	(M-Own)	½ Own	4.70	E-R	I-R	None	Own	8-54½			
Revere.....M	131	32x4½	Yes*	Mons	4	1-4½x6	30.63	H A	2	PS	Str	Bos	Wes	D-B-L	B-L	M-Spi	¾ Stn	3.44	E-R	I-R	None	Gem	8-58			
Rickenbacker.....C	117	32x4	Yes*	Own	C	6-3½x4½	23.44	L C	3	PC	Str	Bos	Bos	D-Own	W-G	M-Mec	½ Tim	4.63	I-F	E-T	Mec	Gem	8-57			
Rickenbacker.....A	121½	33x4½	Yes*	Own	A	8-3 x4½	28.60	L C	9	PC	Zen	Bos	Bos	D-Own	W-G	M-Mec	½ Tim	5.10	I-F	E-T	Mec	Gem	8-59			
Roamer.....6-54-E	118	32x4½	No	Cont	12XD	6-3½x5½	29.40	L A	3	PS	Str	Spl	Wes	P-B&B	Ful	R-M&E	¾ Tim	4.60	E-R	I-R	Mec*	Jac	V-55½			
	138																									
Roamer.....4-75-E	128	32x4½	No	Dues	G1	1-4½x6	28.90	H A	3	FP	Str	Bos	Wes	D-B-L	B-L	R-M&E	¾ Tim	4.63	E-R	I-R	Mec*	Jac	V-55½			
Rollin.....G	112	31x5.2	Yes	Own	G	1-3½x4½	16.90	L A	4	PC	Til	Con	Dyn	P-B&B	Bos	R-Sne	½ Sal	5.10	E-F	I-R	None	Ros	O-46			
Rolls-Royce.....40-50	143½	33x5	No	Own	40	6-4½x5½	48.60	L A	7	FP	Own	"O"	K-Own	Own	Own	M-Own	F Own	3.72	I-R	I-R	Mec	None	V-54½			
Stanley.....750	130	33x5.7	Yes	Own	750	2-4 x5	13.00	X C	2	...	Non	Non	Bij	Non	Non	Non	½ Own	4.50	E-R	I-R	None	War	8-49½			
Star.....4	102	30x4.9	Yes	Cont	Spec	1-3½x4½	15.63	L C	3	PS	Til	A-L	A-L	P-Own	Non	M-Spi	¾ Ad	4.87	E-R	I-R	Mec*	War	8-49½			
Stearns Knight.....C	121	32x4½	Yes*	Own	K i	6-3½x5	25.35	X C	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Chi	½ Own	5.30	E-R	I-R	Hyd*	War	V-50			
Stearns Knight.....B	119	33x4½	Yes*	Own	Kni	1-3½x5½	22.50	X C	3	PC	Sch	A-K	A-L	D-Own	Own	R-Chi	½ Own	4.50	E-R	I-R	Hyd*	Own	V-50			
Stearns Knight.....S	130	33x6.0	Yes	Own	Kni	6-3½x5	29.40	X C	4	PC	Joh	DeJ	DeJ	D-M&E	Own	R-Chi	½ Own	4.90	E-R	I-R	Hyd	Sta	V-50			
Sterling-Knight.....125	32x4½	Yes*	Own	Kni	6-3½x4½	25.35	X C	7	FP	Str	Wes	Wes	D-Ful	Ful	R-Chi	½ Tim	4.66	E-R	I-R	Mec*	Ros	8-58				
Stevens-Duryea.....G	138	33x5	No	Own	G	6-4½x5½	47.25	L C	4	PS	Str	Bos	Bos	D-B-L	B-L	M-Spi	F Tim	3.76	E-R	I-R	None	Ros	8-57½			
Studebaker.....Sta. Six	113	31x5.2	Yes	Own	ER	6-3½x4½	27.34	L C	4	PC	Str	(Wag)	(Wag)	P-Own	Own	R-The	½ Own	4.60	E-R	I-R	Hyd*	Own	8-50			
Studebaker.....Spec. Six	120	32x6.2	Yes	Own	EQ	6-3½x5	29.40	L C	4	PC	Str	(Wag)	(Wag)	P-Own	Own	M-Spi	½ Own	3.69	E-R	I-R	Hyd*	Own	8-56			
Studebaker.....Big Six	127	34x7.3	Yes	Own	EP	6-3½x5	36.04	L C	4	PC	Bal	(Wag)	(Wag)	P-Own	Own	M-Spi	½ Own	3.69	E-R	I-R	Hyd*	Own	8-53			
Stutz.....693-4	120	32x4½	Yes*	Own	691	6-3½x5	29.40	I C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	½ Tim	5.10	E-R	I-R	None	Gem	8-61½			
Stutz.....KLDH	130	32x4½	No	Own	KLDH	1-4½x6	30.63	T C	3	PC	Str	Del	Rem	D-W-G	Own	M-Har	½ Tim	3.75	I-R	I-R	None	Gem	8-60			
Stutz.....695	130	32x4½	Yes*	Own	691	6-3½x5	29.40	I C	3	PC	Str	Rem	Rem	P-B&B	W-G	M-Mec	½ Tim	4.90	E-R	I-R	Hyd*	Gem	8-61½			
Templar.....122	33x4	No	Own	50	6-3½x5	27.34	L C	...	PS	Til	Dyn	Dyn	P-M&E	W-G	R-Sne	¾ Sal	5.10	I-F	E-T	Mec	Ros	8-54				
Velie.....60	118	31x5.2	Yes	Own	50	6-3½x4½	24.38	I C	4	FP	Str	Wes	Wes	P-B&B	Mun	M-Thi	½ Own	5.10	E-F	E-T	Mec	Ros	8-55			
Westcott.....48	125	32x4½	Yes*	Cont	12X	6-3½x5½	29.40	L A	3	PS	Ray	Del	Del	P-B&B	B-L	M-Pet	½ Tim	4.45	E-R	I-R	Mec*	Gem	8-59			
Westcott.....44	120	32x4½	Yes*	Cont	8R	6-3½x4½	27.34	L C	4	PC	Str	Del	Del	P-B&B	W-G	M-Pet	½ Col	4.90	E-R	E-T	Mec*	Gem	8-57½			
Westcott.....60	118	32x4	Yes*	Cont	8R	6-3½x4½	27.34	L C	4	PC	Str	Del	Del	P-M&E	W-G	M-Pet	½ Col	4.63	E-R	E-T	Mec*	Gem	8-56			
Wills Ste. Claire.....A&B68	121	32x4½	Yes*	Own	(A68)	8-3½x4	33.80	I C	3	FP	(Zen)	Del	Del	P-Own	Own	M-Spi	½ Eat	4.45	(E-R)	(I-R)	(None)	Own	8-54½			
	127	32x6.2	Yes	Own	B68						(Sch)								(E-F)	(I-R)	(Hyd)	Own	8-58			
Willys Knight.....64&6	118	33x4.9	Yes	Own	64	4-3½x4½	21.03	X C	3	PS	Til	A-L	A-L	D-Own	Own	R-Own	¾ Own	(4.44)	E-R	I-R	None	Own	8-55			
	124	33x5.7	Yes	Own	64	4-3½x4½	21.03	X C	3	PS	Til	A-L	A-L	D-Own	Own	R-Own	¾ Own	(5.12)	E-R	I-R	None	Own	8-55			
TAXICABS																										
Ambassador.....D-1	114	31x4	Yes	Cont	7U	6-3½x4½	23.44	L C	3	Sp	Zen	Del	Del	D-Lon	Opt	Spi	½ Tim	4.90	E-R	E-T	None	Ros	56			
Checker.....117	33x4½	No	Buda	WTU	1-3½x5½	22.50	L C	3	PC	Zen	Sci	Wes	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	8-57½				
Driggs.....108½	30x3½	No	Own	1-2½x4½	11.03	L C	...	PS	Zen	Bos	Bos	D-Ful	Ful	Spi	¾ Own	4.74	E-R	I-R	None	Own	8-				
Elcar.....4	112	31x4	Yes*	Lycio	CF	1-3½x5	21.03	L A	5	PC	Zen	A-L	A-L	P-B&B	W-G	M-Mec	½ Sal	4.75	E-R	E-T	Mec*	Ros	8-51			
Elcar.....6	118	33x4	Yes*	Own	8R	6-3½x4½	27.34	L C	4	PC	Str	Del	Del	P-B&B	W-G	Spi	¾ Sal	4.75	E-R	E-T	Mec*	Ros	8-52			
H.C.S.....110	29x4½	No	Wauk								Zen	Bos	Bos	P-			½ Own		I-R	E-T	None	Ros	8-			
Kelsey.....E	112	32x4	No	Lycio	CH	1-x3½	5	19.60	L A	5	PC	Zen	Bos	P-B&B	W-M	M-Spi	¾ Sal	5.10	E-R	I-R	None	Lav	8-55			
Pennant.....115	33x4½	No	Buda	WTU	1-3½x5½	22.50	L B	3	PC	Zen	Bos	Bos	Wes	D-Ful	Ful	Blo	¾ Col	4.87	E-R	I-R	None	Jon	8-57			
Premier.....4A	118	33x4½	No	Buda	WTU	1-3½x5½	22.50	L B	3	PC	Zen	Bos	Bos	D-Ful	Ful	Blo	¾ Col	4.70	E-R	I-R	None	Ros	8-57½			
Rauch & Lang.....T	112	32x4	No	Buda	WTU	1-3½x5½	22.50	L C	3	Sp	Zen	Bos	Dyn†	D-Dtl	Det	Spi	½ Sta	5.10	E-R	E-T	None	Gem	8-50½			
Rauch & Lang*.....102	33x4½	No	Own	Electric										None	None	Own	Own	8.60			None	None	8-			
Reo.....113	32x4½	Yes*	Own	T-6	6-3½x5	21.30	G A	4	PS	Sch	N-E	N-E	D-Own	Own	Own	Own	½ Own	4.70	E-R	I-R	None	Own	8-54			
Traveler.....108½	32x4	No	Buda	WTU	1-3½x5½	22.50	L B	3	PC	Zen	Eis	Eis	D-Dtl	W-M	Spi	Col	½ Own		E-R	I-R	None	Gem	8-			
White.....15A	119	31x4½	No	Own	GK	1-3½x5½	22.50	L C	3	Sp	Opt	Opt	P-Own	Own	Own	Own	¾ Own	5.36	E-R	I-R	None	Own	J-			
Willys Knight.....A.B.C.	118	33x4½	Yes*	Own	64	4-3½x4½	21.03	X C	3	PS	Til	A-L	A-L	D-Own	Own	Own	¾ Own	5.12	E-R	I-R	None	Own	8-55			
Yellow.....O-4	109	32x4½	No	Cont	V7	1-3½x5	22.50	L C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	56			
Yellow.....A-2	109	29x4½	Yes	Cont	V7	1-3½x5	22.50	L C	3	Sp	Zen	Bos	N-E†	D-B-L	B-L	Spi	¾ Tim	4.90	E-R	E-T	None	Gem	56			

TAXICABS

ABBREVIATIONS—

*—Electric
 †Generator only
 *—At extra cost
 ‡—On Phaeton models
 A—Aluminum
 Anst—Ansted
 Ad—Adams
 A-K—Atwater-Kent
 A-L—Auto-Lite
 B—Semi Steel
 Bal—Ball & Ball
 B & B—Borg & Beck
 B-F—Both Internal and External
 Four Wheels
 Bij—Bijur
 B-L—Brown-Lipe
 Blo—Blood
 Bos—Bosch
 C—Cast Iron
 Car—Carter
 Cli—Climax
 Col—Columbia
 Con—Connecticut
 Cont—Continental

D—Multiple Disc
 Del—Delco
 Det—Detroit
 De J—De Jon
 Ditt—Dittwiller
 Doo—Dooley
 Dtl—Detroit
 Dues—Duesenberg
 Dur—Durstong
 Dyn—Dyneto
 E—Full Elliptic
 E-F—External Four Wheels
 E-R—External Rear Wheels
 E-T—External Transmission
 Eat—Eaton
 F—Full Floating
 Fall—Falls
 Fil—Flint
 FP—Full Pressure to all bearings including wrist pins
 Ful—Fuller
 ½ F—Semi-Floating
 ¾ F—Three-Quarter Floating
 G—Head and Side
 G-D—Gray & Davis
 Gem—Gemmer

G-L—Grant-Lees
 Goo—Goodrich
 H—Horizontal
 Har—Hart
 Hol—Holley
 Hoo—Hoosier
 H-Sp—Herschell-Spallman
 Hyd—Hydraulic
 I—In Head
 I-F—Internal Four Wheels
 I-R—Internal Rear Wheels
 J—Three-Quarter Elliptic
 Jac—Jacox
 Jax—Jaxon
 Joh—Johnson
 Jon—Jones
 K—Cone
 Kin—Kingston
 L—L Head
 Lav—Lavine
 Lon—Long
 L-N—Leece-Neville
 Lyco—Lycoming
 Mar—Marvel
 M—Metal
 M & E—Merchant & Evans

Mec—Mechanics
 Mons—Monson
 Mun—Muncie
 N—Platform
 Non—None
 N. El.—North East
 Nor—Northway
 O—Special Type
 Opt—Optional
 P—Single Plate
 PC—Pressure to all Crankshaft and connecting rod bearings
 Pen—Penfield
 Pet—Peters
 Pic—Pick
 PS—Splash and Pressure
 Q—Quarter Elliptic
 R—Fabric
 Ray—Rayfield
 Rem—Remy
 Roe—Rockford
 Ros—Ross
 S—Semi Elliptic
 Sal—Salisbury
 Sch—Schebler
 Sci—Scintilla

Sco—Scoe
 Sne—Snead
 Sp—Circulating Splash
 Spe—Special
 Spl—Splinter
 Spl—Splinter
 S. E.—Standard Equipment
 Sta—Standard
 Ste—Stewart
 Str—Stromberg
 T—T Head
 The—Thermoid
 Thi—Thiomer
 Til—Tillotson
 Tim—Timken
 Uni—Universal
 V—Cantilever
 W-G—Warner Gear
 W-M—Willys-Morrow
 Wag—Wagner
 War—Warner
 Weld—Weldley
 Wes—Westinghouse
 Wis—Wisconsin
 X—Sleeve
 Zen—Zenith

Making It Possible for More People to Buy Chevrolets

Chevrolet's new and copyrighted 6% Purchase Certificate Plan insures more business and more profits for every Chevrolet dealer.

Chevrolet dealers enjoy a big advantage in selling the lowest priced quality car with modern three speed transmission.

Now they sell also—the car that is easiest to buy!

The Plan's Advantages

Under this new plan, anyone can begin buying a Chevrolet by paying even such a small amount as a few dollars down.

Then regular weekly or monthly payments are made—and 6% is credited to the customer on all money paid on the certificate.

When the amount saved, plus the interest that has accumulated, equals the down payment on a car, delivery is made.

Present car owners also benefit by this plan. They get not only 6% on all payments made on cars to be delivered in the future—but also a 6% credit on all service, repairs and accessories bought from the Chevrolet dealer for their present cars.

Money Absolutely Safe

Every dollar invested under this plan is insured against all loss by a large and well-known insurance company.

People everywhere have been quick to appreciate the unequalled advantages of this new Chevrolet Plan. And Chevrolet dealers everywhere are profiting by the increased business it secures.

CHEVROLET MOTOR COMPANY, DETROIT, MICH.

Division of General Motors Corporation

Largest Producer Lowest Priced Quality Cars



The Chevrolet
6% Purchase
Certificate



for Economical Transportation

Regular Service
Cords and Fabrics
Heavy-Duty Cords



Empire
"wear longest" **TIRES**

EMPIRE TIRE & RUBBER CO



Be sure you *Get* value
Be sure you *Give* received

Empire Tires are in demand by those wide awake dealers who, in an era of price-cutting, are not losing sight of the fact that in many cases, the quality of the tires they are buying and selling may be cut as well.

From the standpoint of weight, plies and endurance, Empires are the same today as when the market was at peak — full ply — full oversize — full weight. Their low prices are due entirely to the complete elimination of unnecessary expense and burdensome overhead.

Do Not Be Mislead

You should buy your tires more carefully today than ever before. A low price is no bargain if you place your reputation and business in jeopardy by selling tires cut in quality as well as price. Our Exclusive Dealers' Propositions explains why we can sell Empires at such a fair price — and still maintain the highest quality. Send for it today.



RPORATION, TRENTON, N.J.

TUNG-SOL

Lights the way to
Larger Sales & Profits

AUTOMOTIVE merchants and servicemen who are in the dark as to which is the better bulb proposition, will find that TUNG-SOL clearly lights the way to sales and profits. Turn the light on your bulb business. Switch to TUNG-SOL and get the advantages of quick sales; real consumer demand; prompt deliveries from 16 distributing points throughout the U. S. and—a very interesting sales policy.



Write for the Tung-Sol Proposition

"Let TUNG-SOL Light the Way"

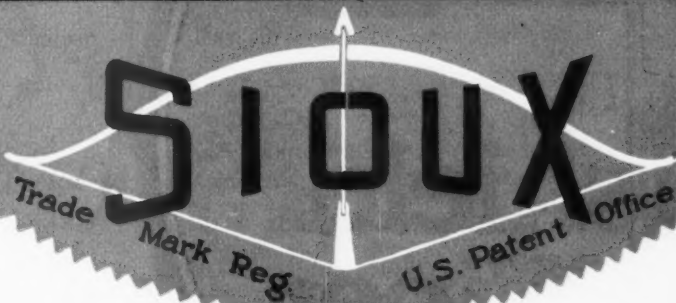
**MINIATURE INCANDESCENT LAMP
CORPORATION**

Newark, N. J.

*Licensed Under General Electric Company's
Incandescent Lamp Patents*



TUNG-SOL



For Practically All Reseating Jobs

this set contains the proper size reamer and pilot stem. Comes complete in a box with each stem place and each reamer post marked for each size. Set includes 10 Sioux Valve Seat Reamers and 4 Pilot stems in the following sizes:

1½ in. . 45°	1⅝ in. . 30°	1¾ in. . 45°	2 in. . 45°	2¼ in. . 45°
1⅝ in. . 45°	1¾ in. . 30°	1⅞ in. . 45°	2⅛ in. . 45°	2½ in. . 45°

Pilot Stems ⅝-in., ¾-in., ⅞-in., 1-in.

Increase shop production and profits by reaming pitted valve seats before grinding.

VALVE SEAT REAMER SET

Ask Your Jobber About It

ALBERTSON & CO.

SIoux CITY, IOWA



The BOSCH



**BOSCH
IGNITION
SYSTEM
FOR
FORDS**

TYPE 600

Insures quick, easy starts, clean plugs, added power. Has automatic spark advance—is waterproof. Prevents all ignition troubles. Price, \$12.75.



**BOSCH
SHOCK
ABSORBER**

"Smooths the Road"

A new, scientific device that controls car springs perfectly and provides true riding comfort at low cost. Prices per pair: For Fords \$10.00. Medium Cars \$15.00. Heavy Cars \$20.00.



**BOSCH
RED
SPARK
PLUGS**

The big sure firing, gas tight plug with the unbreakable insulator and the real nickel electrodes. Get the genuine—it's red! Regular sizes \$1.00. Ford size 75c.

Long Line

Make Rain and Snow Pay You a Profit!

The Bosch Electric Windshield Wiper will help you do a rushing business this fall and winter.

It's a positive necessity. It can be absolutely depended on to do its job satisfactorily and economically.

It puts no burden on the battery—uses less current than a headlight bulb.

Its speed is always the same—doesn't hurry one minute, and lag or stop the next.

It's powerful, too—will operate the Bosch Tandem Wiper, giving clear vision to both front seat occupants. It shovels snow right off the glass.

It's different than other windshield wipers—it's better, finer, stronger.

Make a window display of Bosch Electric Wipers and Tandem Attachments now—it will boost your sales wonderfully.

The nearest Bosch Branch can fill your order promptly.

Wire or write for a sample TO-DAY.



It puts no burden on the battery — uses less than 1¼ amperes of current.

Price \$9.50

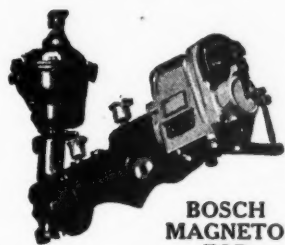
In Canada, \$13.00

DEALERS: Big advantages open to live dealers who can become Bosch Sales Agents and sell the Bosch Long Line of Automotive Necessities.

AMERICAN BOSCH MAGNETO CORPORATION

Main Office and Works: Springfield, Mass.

Branches: New York — Chicago — Detroit — San Francisco



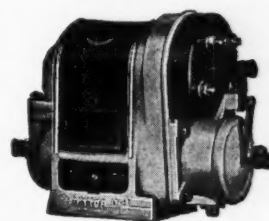
**BOSCH
MAGNETO
FOR
FORDSONS**

Provides Bosch High Tension Magneto Ignition for Fordsons. Eliminates coils and timer. Prevents all ignition troubles. Installed with, or without, the Bosch Throttle Governor. Prices on request.



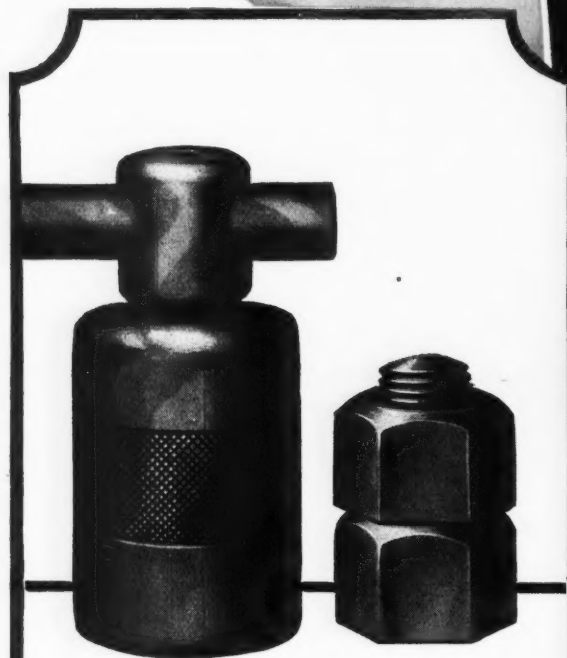
**BOSCH DE LUXE
IGNITION SYSTEM
FOR FORDS
TYPE 513**

Includes the Bosch Coil, and Bosch Compensating Governor, which automatically advances and retards the spark to exactly meet the Ford engine's characteristics. Wonderfully efficient. Price \$35.00

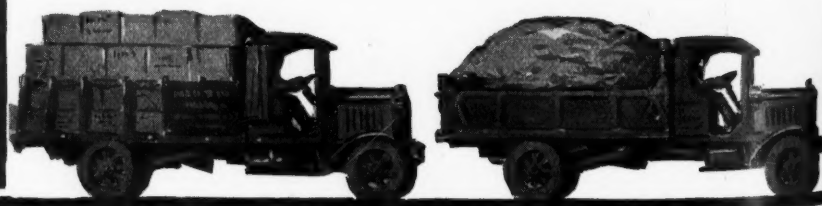


**BOSCH
HIGH TENSION
MAGNETO**

The world's most dependable ignition system—over four million in use today—in demand everywhere for use on cars, trucks, tractors, motorcycles, motor boats and stationary engines. Prices on request.



This shows the great depth of Bethlehem Giant Sockets. It makes them useful in many places where it was impossible to use a socket wrench before. They are deep enough to take two nuts and allow for bolt extension—putting them in a class by themselves and making them practically indispensable wherever lock nuts or extension bolts are used.





Giant

SOCKET WRENCHES

for Trucks, Tractors and Heavy Machinery

Now! A great big husky—heavy-duty socket set. Never before offered the mechanic, and he wants it. These sockets are massive. The walls are strong and very deep—deep enough to take two nuts and allow for bolt extension (as shown in panel to left.) This makes them indispensable. And the service man is looking for this very set.

At least one of these GIANT Sets should be in every garage and service station. Many will have several sets. For while practically indispensable on trucks, tractors and heavy machine work, they have great utility in passenger car service as well. Socket sizes are shown below. Write for catalog describing the complete Bethlehem line.

Bethlehem Spark Plug Company, Inc.
Bethlehem, Penna.
E. H. Schwab, President

Note the husky, heavy gauge, welded steel box in orange enamel finish with heavy steel bar handle to carry it by and which is detachable and comes packed in the box. A real tool kit.

Included in the Giant Set are nine of these deep sockets, ranging in S. A. E. sizes from 15/16" to 1 1/4". Also an 8-inch Extension Bar, a 16-inch Extension Bar, also an 18-inch adjustable Sliding Tee Handle Bar.

All parts are turned from special Bethlehem alloy steel, heat treated to give the proper durability and have the Bethlehem copper oxidized finish.

The List
is

\$18⁵⁰

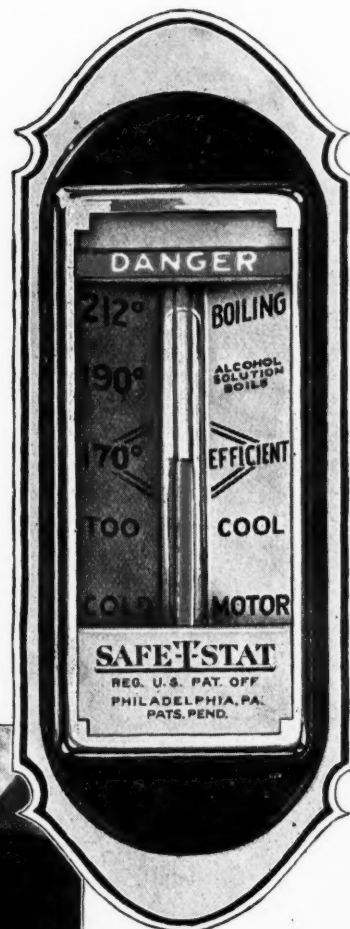
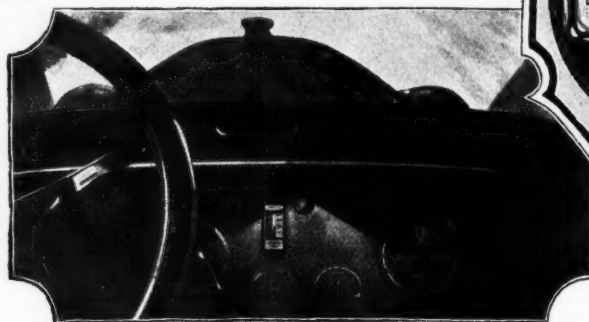
with
special discounts



Three Big Points for the Motorist

- 1—**Visible Night and Day.** Safe-T-Stat is mounted where a heat indicator should be—on the instrument board — and consequently is visible night and day and is never obscured by bad weather.
- 2—**Theft-Proof.** Safe-T-Stat is theft-proof and requires no locks.
- 3—**Accurate Under Any Conditions.** Safe-T-Stat takes the temperature direct from the engine and registers accurately regardless of weather or radiator conditions. It is the one device that registers true temperatures of motors cooled by both thermo-syphon and pump systems.

Safe-T-Stat is electrically controlled and must not be confused with heat indicators actuated by vapor, or by fluid or gas pressure systems.



SAFE-T-STAT

and ENGINE HEAT INDICATOR Three Big Points for the Dealer

- 1—**One Model Fits All Cars,** and that means that there is only one size to stock. With one price of \$10.00.
- 2—**Easy to Install.** Safe-T-Stat is quickly installed without tapping the motor block and operates indefinitely without adjustment or expense.
- 3—**Dependable in Operation.** There are no come-backs from a Safe-T-Stat installation. It is a simple operation and you can bank on Safe-T-Stat to do its job accurately and faithfully.

At your jobber's or write us direct for the nearest distributing point.

The SAFE-T-STAT Co., Inc.

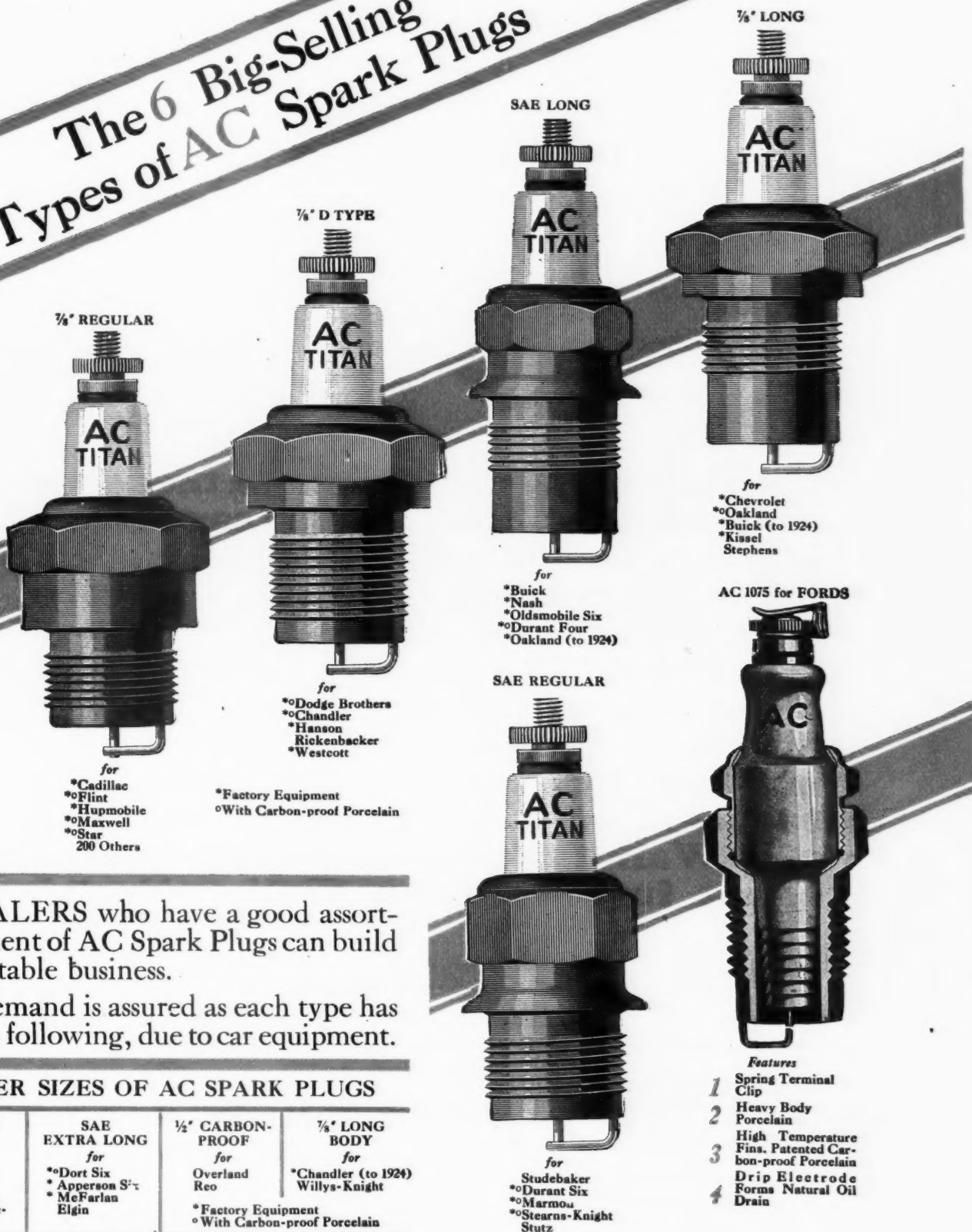
FACTORY
57th and Westminster Ave.

PHILADELPHIA

GENERAL OFFICES
Drexel Building

More than 85% of the
American cars and trucks
produced, Fords excluded,
are AC-equipped

The 6 Big-Selling Types of AC Spark Plugs



DEALERS who have a good assortment of AC Spark Plugs can build a profitable business.

The demand is assured as each type has its own following, due to car equipment.

OTHER SIZES OF AC SPARK PLUGS

REGULAR METRIC	SAE EXTRA LONG	1/2" CARBON- PROOF	3/4" LONG BODY
for *Hudson *Essex *Duesenberg *Wills-Sainte- Claire	for *Dort Six *Apperson Six *McFarlan Elgin	for Overland Reo *Factory Equipment *With Carbon-proof Porcelain	for *Chandler (to 1924) Willys-Knight

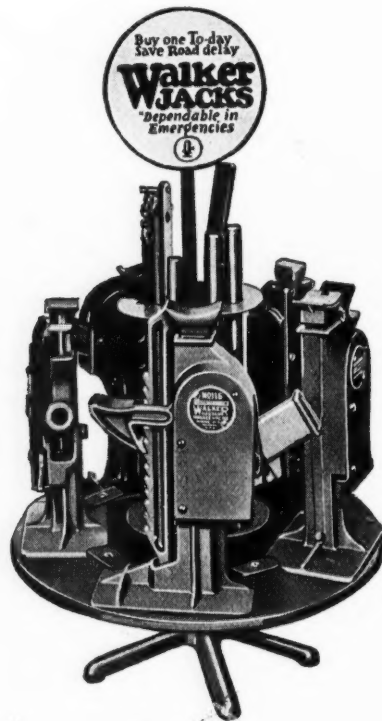
AC-SPHINX
Birmingham
ENGLAND

AC Spark Plug Company, FLINT, Michigan

Makers of AC Spark Plugs—AC Speedometers

U. S. Pat. No. 1,135,727, April 13, 1915; U. S. Pat. No. 1,216,139, Feb. 13, 1917. Other Patents Pending

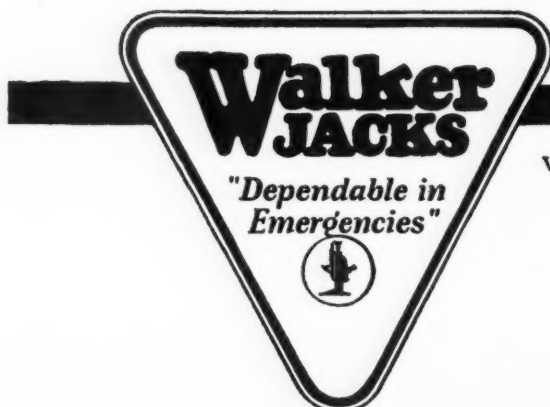
AC-OLEO
Levallois-Perret
FRANCE



I have demonstrated to seven thousand accessory dealers that they can largely increase jack sales by using a Walker Counter Display . . . A jack is a necessary part of the equipment of every car, and when properly displayed becomes one of the best profit items in his store . . . To those dealers who are not satisfied with their profit and turnover on jacks, I suggest the trial of a Walker Counter Display, which comes free with ten Walker Jacks.

Willard Walker

President.



WRITE FOR MINIATURE CATALOG OF WALKER JACKS

Walker Manufacturing Co.
Racine, Wisconsin

*"The Best Equipped Shop
Gets the Business"*



For a "finished" job— Stevens Spacing Washers

STEVENS SPACING WASHERS

can be used to advantage on the following parts of ALL cars:

Front Axle
Spindle Bolt
Shackle Bolt
Spring Clips
Wheel Bearings
Steering Gears
Steering Arm
and Clevis
Tie Rod Bolts
Motor Bearings
Generator and
Starter Bearings
Clutch and
Transmission
Universal Joints
Thrust Bearings
Drive Shaft
Axles
Brake Adjust-
ments

IT'S no fault of yours if a customer complains that his car rattles and jerks just as much *after overhauling* as before he sent it to your shop.

You can't rebuild it for him at the price he would be willing to pay!

But you CAN take up all excessive wear or play at vital points by using Stevens Spacing Washers, at a trifling cost.

These washers are specially designed for making quick adjustments. They are just the right diameter and have just the right size hole for the part to which they are applied. And thin enough to permit building up neatly to any height.

Thru Your Jobber—His Service Is Economy

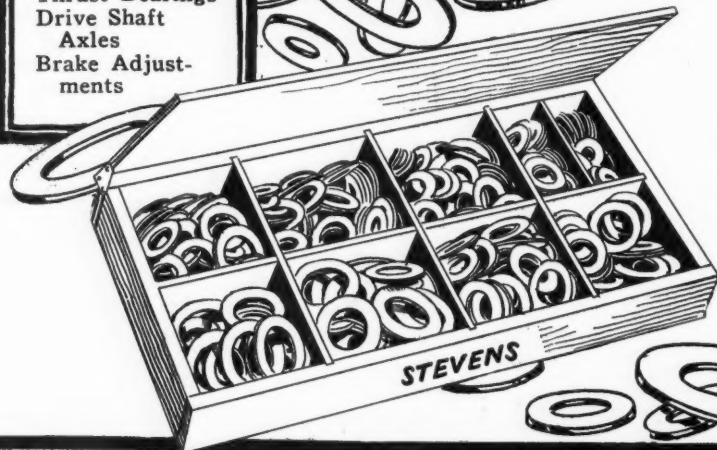
Stevens & Company

375 Broadway
NEW YORK

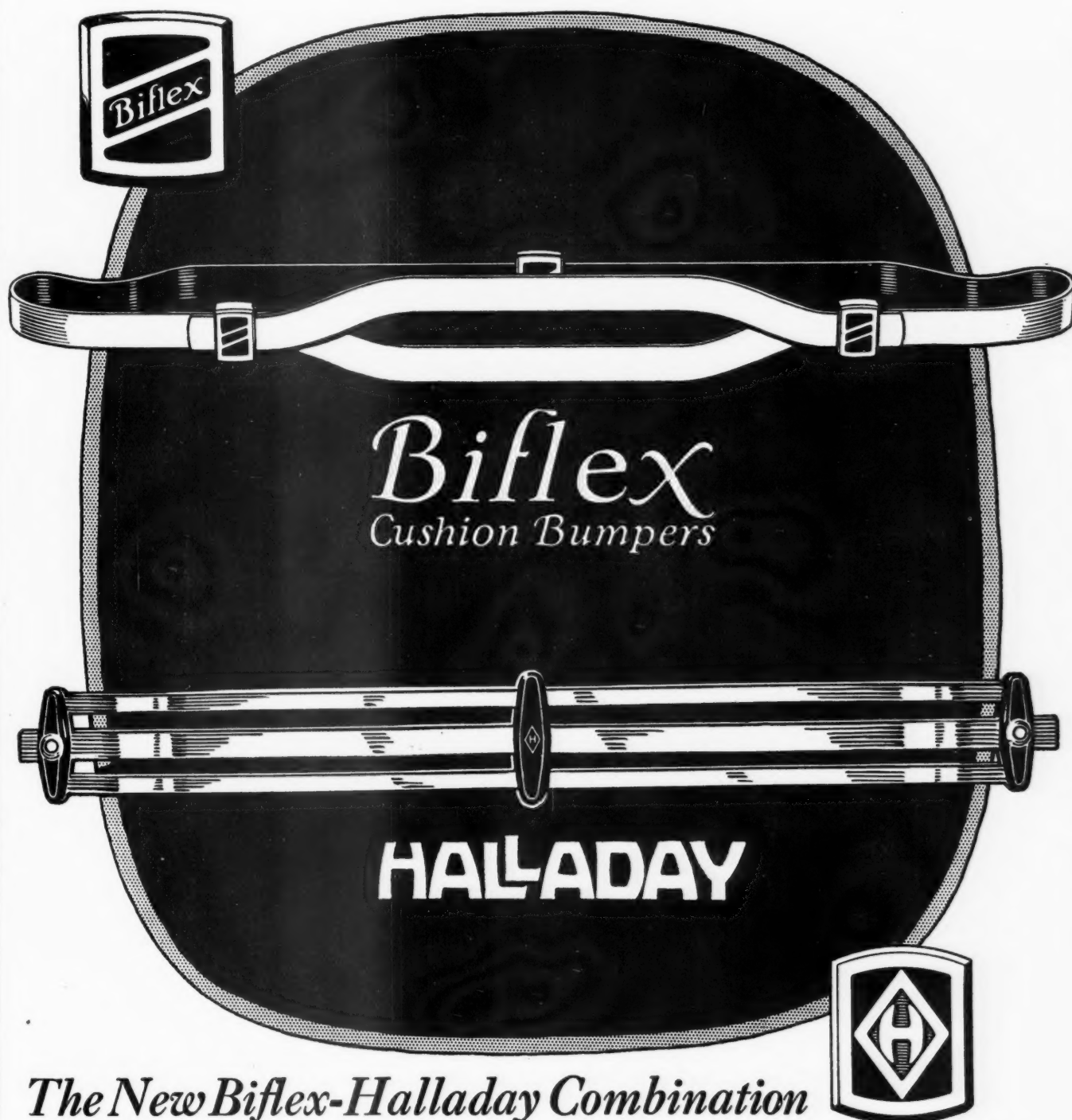
1438 So. Mich. Blvd.
CHICAGO

Made of bright cold-rolled steel with smooth, clean-cut edges. Box of 400 in 10 assorted sizes **\$2.00** from $\frac{3}{8}$ to 1 in.

Write for Catalog 18 telling you how to make more money on Ford and Fordson jobs.



Stevens **SPEED UP**  Tools



The New Biflex-Halladay Combination

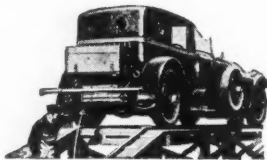
Biflex—finest of all bumpers, and Halladay, quality leader among parallel bar bumpers, have combined. Now Biflex offers to car dealers a new, united line, including new Halladay 2-bar bumpers and a beautiful new 3-bar bumper, which completely meets the requirements of every car dealer.

Here are the distinct advantages which you will have with this new line-up:

- ① A larger variety of bumper styles and sizes—both Biflex and parallel bar.
- ② A wider range of retail bumper prices.
- ③ Interchangeable brackets on Biflex and Halladay bumpers for many cars.
- ④ A new, progressive sales policy that is fixed and that is designed to protect the car dealer and offer him a greater profit.
- ⑤ A strong national advertising campaign, including full pages in *The Saturday Evening Post*, which will create a greater demand for these popular bumpers.

THE BIFLEX CORPORATION, WAUKEGAN, ILLINOIS

Make your profits this winter with ALEMITE Lubricating Service



Read What Others Are Doing Now

G. P. McIntyre, of Chicago says—
"One man with a 2-car rack costing
\$100 ought to make over \$5000 a year."
(Mr. McIntyre clears \$10,000 and
more per year).

"We serviced about ten cars a day
when we started in 1919. Now we
handle from four hundred to five
hundred a day."—Washburn-
Walker Co., Inc., Los Angeles.

"Our business grew from a few cars
to fifty-two cars a day. We started
with nothing but a rack, a compres-
sor and a barrel of grease."—Univer-
sal Lubricating System, Portland,
Oregon.

"Our great problem now is more room.
We get much of our work from fel-
low dealers. We are looking about
for more station locations."—Lubri-
cation Service Co., Denver.

"My rack cost me only \$40. Without
a helper I make \$5000 a year and
more. With each helper I hire the
rate of profit is 30% to 40% more."
—R. L. Perkins, Chicago.

"I had only \$200 when I started. I serv-
ice only Alemite-equipped cars. I'm
figuring on several more stations."
—Lowry Lubricating Service, Pasa-
dena, Calif.

THOUSANDS of garages and car dealers are now
keeping up their profits through cold weather with
Alemite Lubricating Service. Write us today for full
information.

Closed cars are year 'round cars. They need chassis
lubrication the year 'round. And winter is the time
when no motorist wants to do it himself.

So cash in on this. Last winter filling stations and
garages actually *increased* their business in place of
the normal slump.

Lubricating service is easily installed. We furnish
complete plans, instruction charts, advertising and sales
plans, signs, etc. Write today for our *free* book, "How
to Go Into the Lubricating Service Business". It gives
you the whole story. No obligation. Get this *free* book
today. It may mean the difference between a slow
winter and a profitable one.

THE BASSICK MANUFACTURING CO.

2662 N. Crawford Ave., Chicago, Illinois

A Bassick-Alemite Product

ALEMITE

High pressure lubricating system



**Tear this
out now**

FREE BOOK!

Here's the whole story
of lubricating service.
How to install; how to
get trade; how to cash
in on Alemite advertis-
ing. Just mail the handy
coupon. No obligation
whatever.

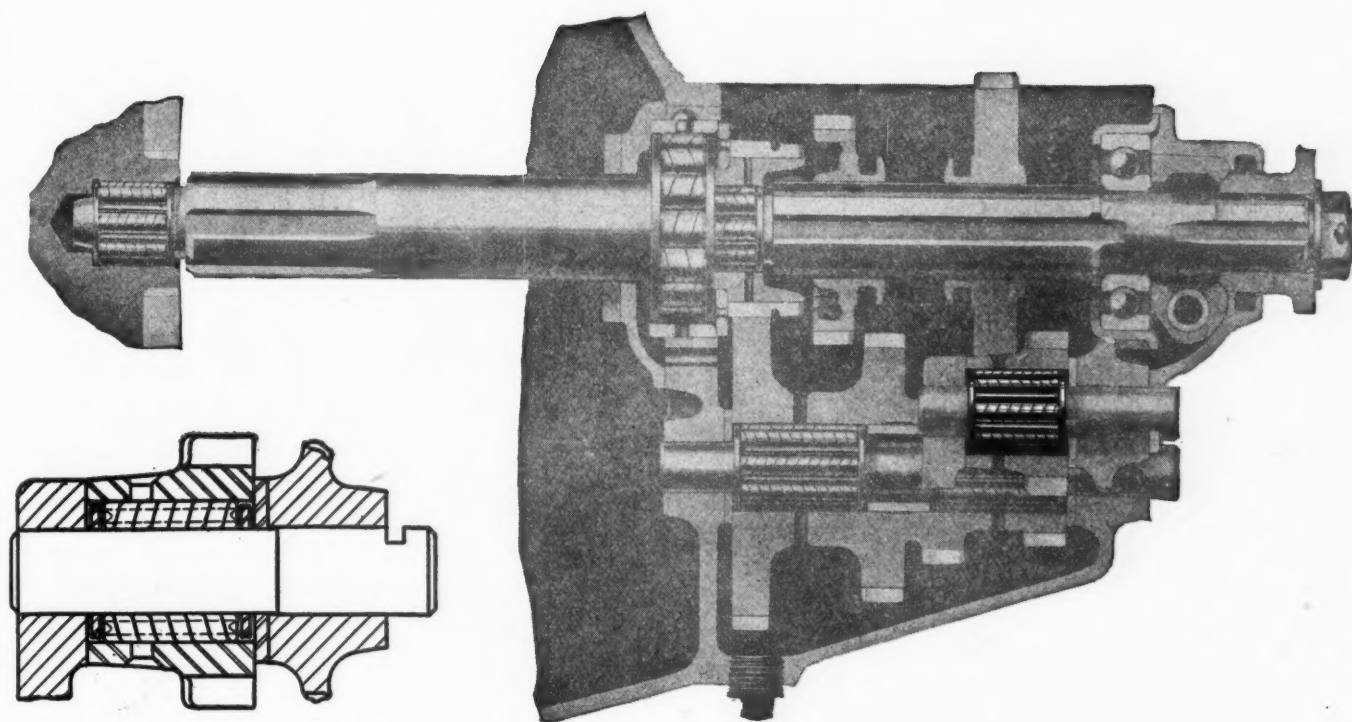
BASSICK MANUFACTURING COMPANY
2662 N. Crawford Ave., Chicago, Ill.

Please send me without obligation your Free book, "How to Go
into the Lubricating Service Business".

Name.....

Address.....

City..... State.....



Higher Quality Transmissions at Low Cost

No. 4 *In the Reverse Idler*

In quieting your transmission the reverse idler should not be overlooked. A transmission may run quietly on all forward speeds, but if reverse is noisy the whole unit will be discredited.

A Hyatt roller bearing installed in the reverse idler gear as illustrated above produces additional quietness

in operation. It is easy to assemble and will run indefinitely without adjustment or attention of any kind.

There is no need to worry about replacing Hyatt reverse idler bearings for they seldom need replacing. Their installation assures permanence, freedom from attention and quiet operation.

HYATT ROLLER BEARING COMPANY

NEWARK DETROIT CHICAGO SAN FRANCISCO

MILWAUKEE

WORCESTER

CLEVELAND

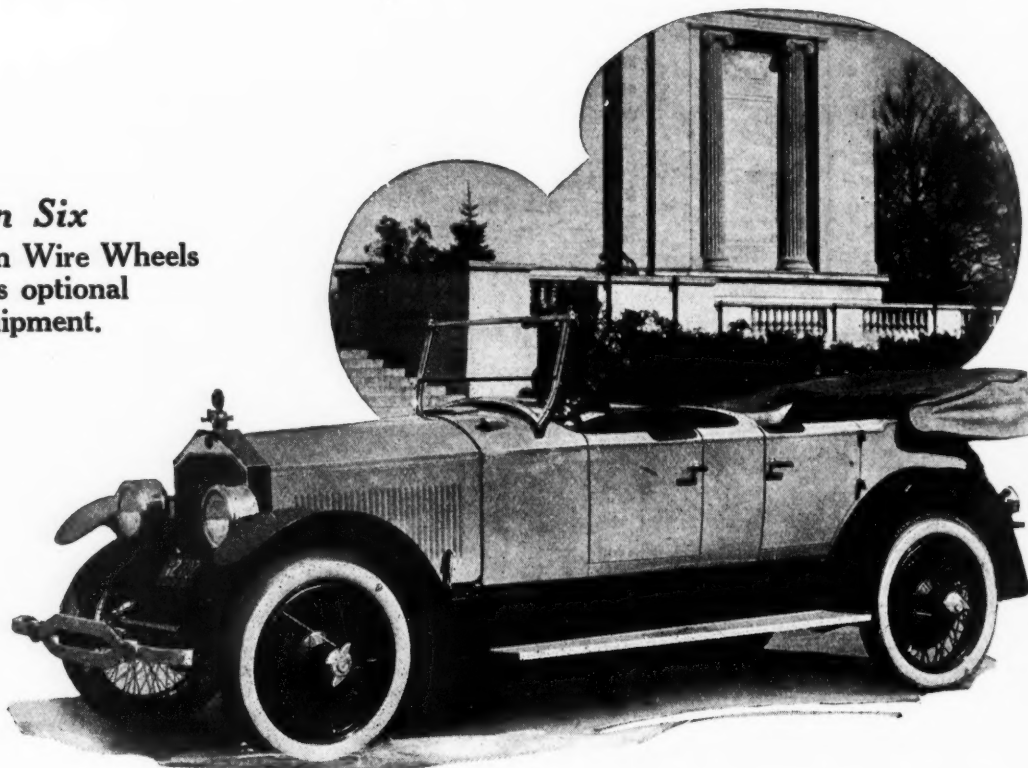
PITTSBURGH

PHILADELPHIA

HYATT

Quiet
Roller Bearings

McFarlan Six
with Dayton Wire Wheels
furnished as optional
factory equipment.



Aristocrats of the Road



Standard Design (Dental Drive), Dayton Wire Wheel. Identical in style and construction to the famous Dayton Racing Wheels. Made to fit standard makes of cars, and for either standard or balloon tires.

The man who wants the fullest measure of comfort and safety, plus an unusual degree of refinement, finds rare satisfaction with Dayton Wire Wheels.

Then, too, there is the item of quick, easy tire change, while their light weight constitutes a strong argument toward better tire service. These are some of the many reasons why Dayton Wire Wheels are becoming increasingly popular with discriminating car owners. They are truly the aristocrats of the road.

The Story of Dayton Wire Wheels is vitally important to Dealers and Distributors. Write us.

The Dayton Wire Wheel Co., Dayton, Ohio

"For the Man Who Drives or the Man Who Flies"

Dayton

Wire Wheels

QUICK DETACHABLE

The ROSE LINE

By ingenious improvements Rose has lifted its products out of the commonplace and given them outstanding superiority.

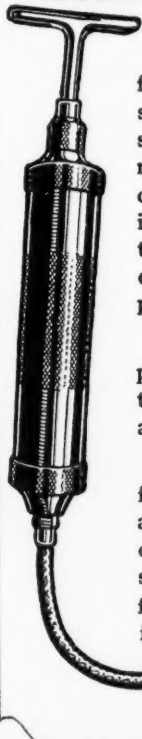
To take a tire pump, such as many another manufacturer could make, and put a new type of valve in it that will make pumping much easier is characteristic of Rose.

Like improvements in our other products has given the Rose Line fame from one end of the country to the other.

If we cannot make a product *better* than ordinary we do not make it at all.

FRANK ROSE MFG. CO., Hastings, Nebr.

ROSE HIGH PRESSURE LUBRICATOR



The only self-filling high pressure lubricating system on the market. A pull of the handle fills it with grease. A turn of the grip exerts a ton of pressure.

A high grade product, factory tested and guaranteed.

In price it is far below average. The Ford outfit, for instance, including fittings retails for \$3.96.

ROSE Grease Bucket



This bucket is used in thousands of garages and filling stations with great success.

It carries 25 lbs. of grease. It pumps $\frac{1}{4}$ lb. per stroke through its metal hose, the nozzle of which is tapered to fit various sizes.

Equipped with Rose Grease Gun described below. One stroke of the bucket pump fills the gun.

ROSE Grease Guns

In almost every shop you enter you will find a Rose Grease Gun. It is a good gun, well made and has two outstanding features—it fills itself with a pull of the handle and it has the tapering nozzle which fits snugly into various sized openings.

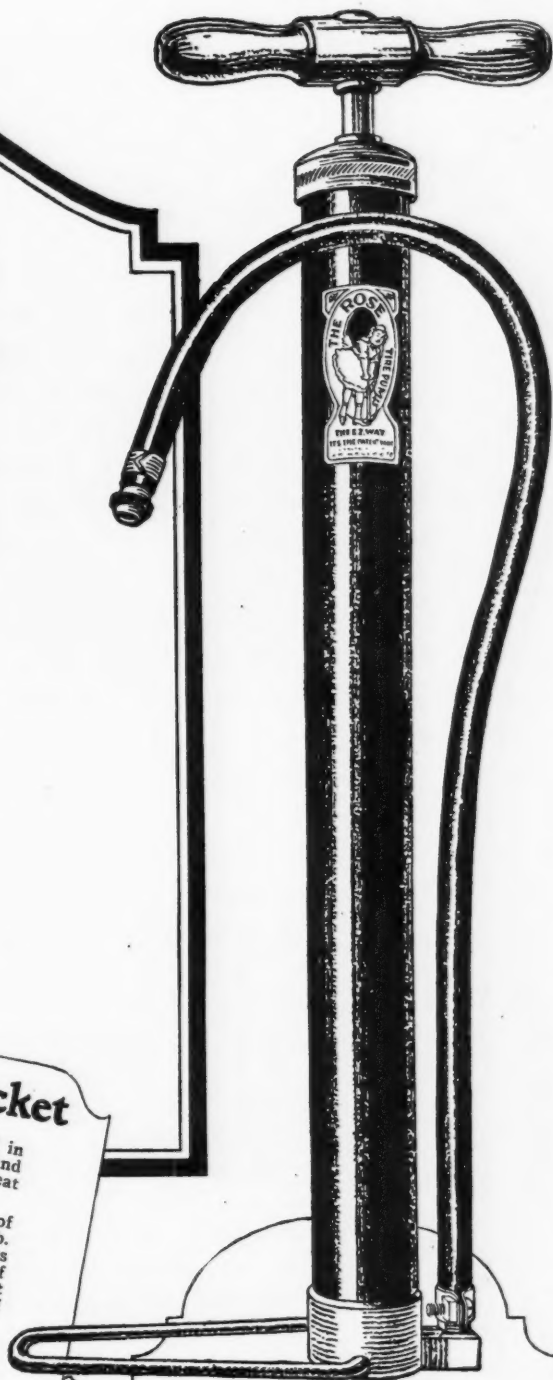


ROSE TIRE PUMP

For nine years America's leading tire pump. It is made as well as any pump can be, and in addition features a patented valve that makes tire pumping much easier. Its stroke is smoother and more powerful. It does not leak or waste effort. Most dealers stock them.

REPLACEMENT HOSE

In these days of economical buying we are doing a good business in replacement hose for old pumps of all kinds. Ask your jobber.



The Largest Engine Bearing Manufacturers in the World

DOING but one thing and doing it well, making a better product, selling the product at fair prices, fair dealing, reliability, those are the ingredients that have made this business possible. Those, we believe, are the business principles that have caused more automobile manufacturers, engine builders and tractor manufacturers to look to Federal-Mogul Corporation for their engine bearings.

The concentration of this great volume of business at one point, under one management, is a great advantage to the buyer.

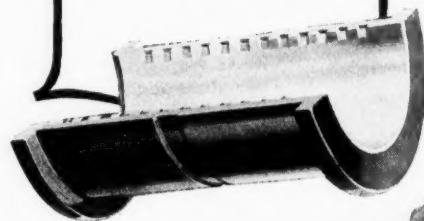
It permits the employment of the best brain power and the purchase of the finest of mechanical equipment. With this backing, better products, better service and the best possible prices are sure to result.

See the Federal-Mogul complete line exhibit at the New York and Chicago Automobile Shows

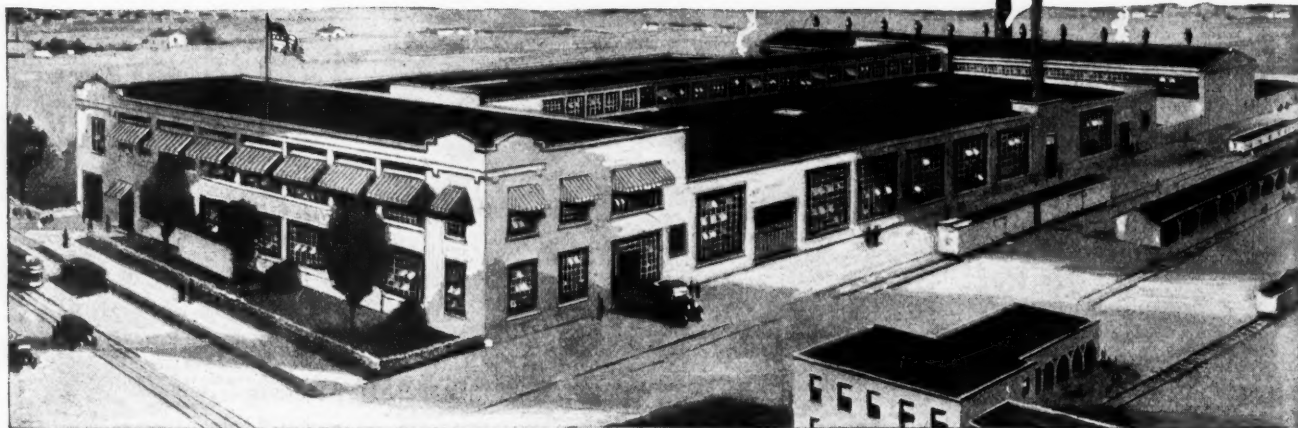
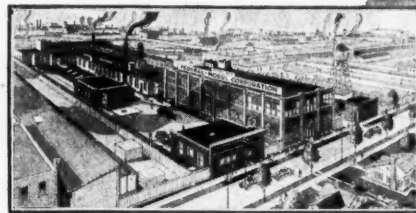
FEDERAL-MOGUL CORPORATION, DETROIT, MICH.
A consolidation of the Muzzy-Lyon Co. and Federal Bearing & Bushing Corp.

The Federal-Mogul Complete Line

Bronze Back Babbitt Lined Bearings
Die Cast Babbitt Bearings and Bushings
Bronze Bushings
Bronze Washers
Bronze Castings
Babbitt Metals
Bronze Cored and Solid Bars



Federal Mogul



A Manufacturer's reputation is safe with Federal-Mogul Products

Compressed Air Has Revolutionized Shop Practice and Cut Expenses



Paint spraying, that took hours by hand is done in a fraction of the time with a Brunner Paint Spraying Outfit. Duco and other pyroxylin finishes, enamels and filler coats are applied quickly, evenly and efficiently at a big reduction in cost and time.

And paint spraying is only ONE of many uses that air can be put to to build profits for the garage and service station.

Engine cleaning, upholstery cleaning,

operating pneumatic tools, valve grinding and of course—continuous tire inflation.

A most important point for you to consider is that a Brunner costs so little to run. It is a money-making unit from every angle and will begin increasing your profits from the first day it is installed.

Write us—explain your requirements—let us set you on the way to Brunner profits.

Brunner Mfg. Co., Utica, N. Y.

Oldest and Largest Builders of Garage Air Compressors in the World

BRANCH OFFICES:

Cincinnati, O.

Kansas City, Mo.

San Francisco

EXPORT OFFICE: Utica, N. Y.

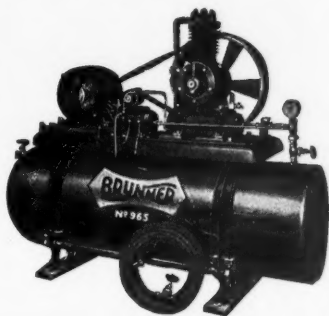


BRUNNER MODEL

965

Heavy Duty Assembly. Smooth and silent as an 8 cylinder motor—balanced load type—no vibration.

All running surface ground and polished. Capacity 6 cu. ft. air per minute at 350 R. P. M.—7.70 cu. ft. at 450 R. P. M. Heavy seamless 65 gal. tank.



There's Money in the Air from a Brunner Compressor



"AIR Profits" is a booklet full of money making ideas for the progressive garage owner. Send for this booklet and get the benefit of Brunner experience.

BRUNNER

AIR COMPRESSORS

FRANCISCO AUTO HEATERS

Lead the Field in Low Cost Efficiency!



Lowest cost for installation—no expense for upkeep or repairs—and abundant heat while driving. That is the record of the Francisco Heater.

The Francisco is not an exhaust type heater. It takes in pure, fresh air from back of the fan—passes it over the hot manifold—and delivers it to the tonneau in an even, steady flow. It ventilates while it heats, changing all the air in the car every two to three minutes. There are no parts to get out of order, no fumes, no rattles or squeaks. **It is guaranteed to give perfect satisfaction.**

Thorough tests have shown that it keeps the temperature in an open car comfortable, if the curtains are put on. It produces more heat—in less time—than any heater on the market. There is a Francisco made for both open and closed models of all standard make cars.



Large Profits for Dealers!

DEALERS receive big profit margins on the entire Francisco Line. They have no expense for service—and the complete satisfaction of Francisco users insures constant repeat orders. For the past five years accessory dealers have found the Francisco Line an **easy selling—quick turnover—large profit line.** "Cash in" now on the reputation Francisco performance has earned.

Write your jobber today for dealers discounts and full information about this complete line of famous heaters.

THE FRANCISCO AUTO HEATER COMPANY

Dept. 14

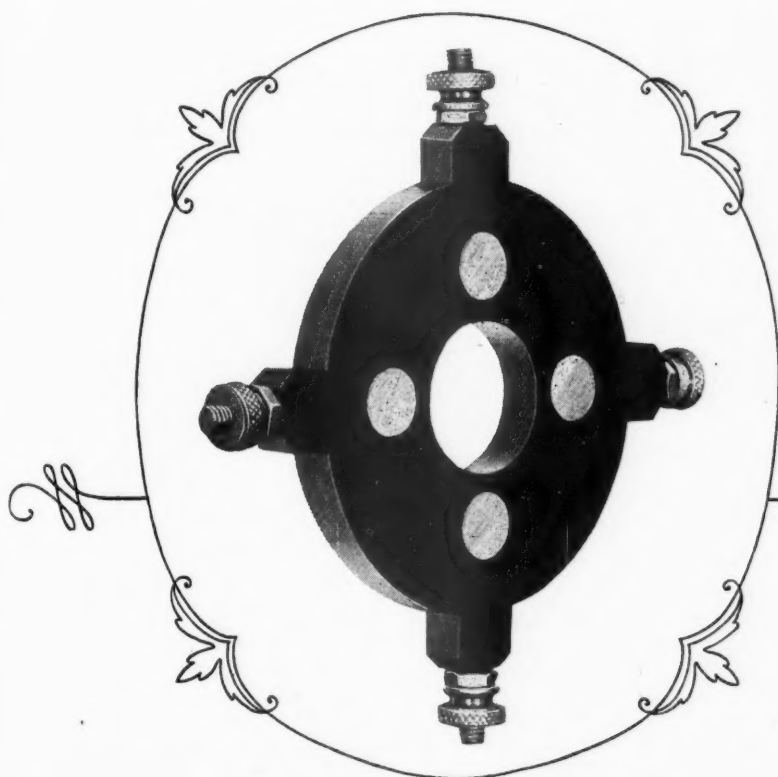
Columbus, Ohio

Price List of Francisco Heaters

American	\$10.00	Lexington Ansted '21-'25	\$10.00
Anderson '22	10.00	Maxwell '20-'25	5.00
Auburn 7R- and SR Continental	10.00	Mitchell '20-'25	10.00
Buick Four '22-'24	10.00	Moon 6-Y Motor	10.00
Buick Six '20-'24	10.00	McFarlan	10.00
Cadillac, 53, 55, 57, 59 & 61-63	20.00	Nash Four '22-'24	10.00
Chalmers '22-'24	10.00	Nash Six '20-'25	10.00
Chandler '20-'25	10.00	Oakland '20-'25	10.00
Chevrolet 4-90	5.00	Olds Eight '20-'24	20.00
Cleveland '21-'25	10.00	Olds Six '24-'25	10.00
Columbia 6-Y Motor	10.00	Olds Four '21-'24	10.00
Chrysler '25	10.00	Overland Four '20-'25	5.00
Davis 6-Y Motor	10.00	Paige 6-66	10.00
Dodge, all models	5.00	Peerless 6	10.00
Dort '22-'24	10.00	Peerless 66	20.00
Durant Ansted '22-'25	10.00	Pierce-Arrow Model 33 and 80	10.00
Durant Four '22-'25	10.00	Reo '21-'25	10.00
Earl '23-'24	10.00	Reo Speed Wagon	10.00
Essex '20-'25	10.00	Rickenbacker '22-'24	10.00
Flint '25	10.00	Rollin '25	10.00
Ford Sheet Metal all models	2.50	Star '23-'25	5.00
Franklin Models 9 and 10 and 10C	10.00	Stephens Sallent Six '22-'25	10.00
Gardner '23-'25	10.00	Stearns-Knight '24-'25	10.00
Gray '23-'25	5.00	Studebaker Light Six '21-'25	10.00
Haynes	10.00	Studebaker Big or Special Six '19-'25	10.00
Hudson '20-'25	10.00	Stutz '20-'25	10.00
Hupmobile '20-'25	10.00	Vellie	10.00
Jewett '22-'25	10.00	Westcott '24-'25	10.00
Jordan '21-'25, 6 and 8	10.00	Willys-Knight '22-'25	10.00
Kissel Kar	10.00	Wills Ste. Claire '22-'25	20.00

FRANCISCO

AUTO HEATER



*Perfect
Timing*

*Under All
Conditions*

with the accepted

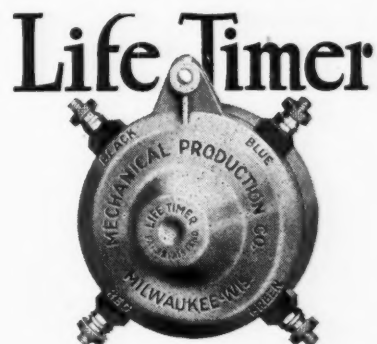
Life Timer

for Fords

NEWER standards in sales and in service to the driver are being set by Life Timer, the Ford Timer by which all distributor types are judged. Thousands of miles of perfect contacts wiped with the reversible bakelite commutator shown above.

Accepted by the Trade *because:*

- 1** Only Timer with a reversible Commutator. "Two Timers in one."
- 2** An "engineering" job that cannot short with oil or water.
- 3** Needs no attention.
- 4** Made of the highest grade materials.
- 5** Cannot warp or distort in any way.
- 6** *Unconditional Guarantee.*

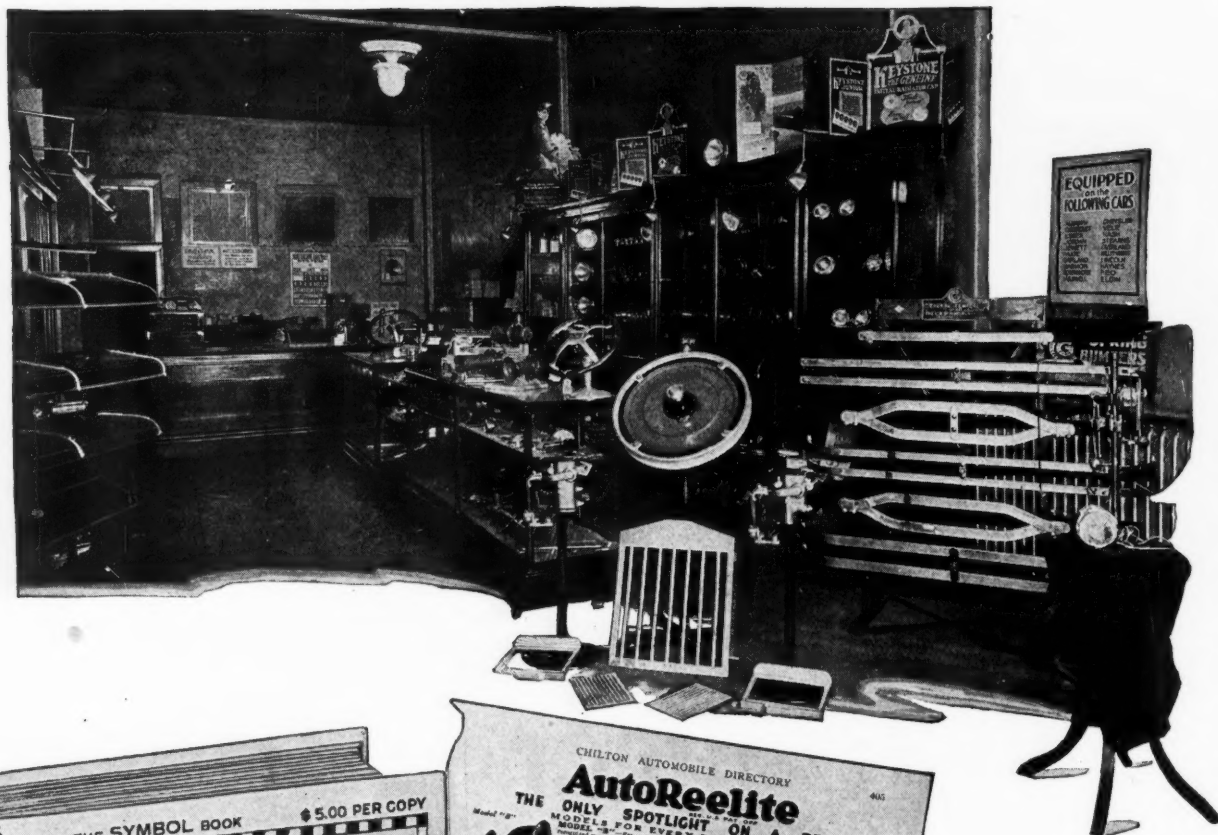


Jobbers-Dealers: Write for this proposition.
Catalog material now ready.

Mechanical Production Co.

Milwaukee, Wisconsin

"Makes it



For Specific
Buying
Information
Consult Your
**Yellow
Directory
First**

Here is the advertisement, a page of buying information, to which Mr. Bennett refers in his letter. Many other manufacturers insert condensed catalogs of this kind in the Yellow Directory.

Easy to Buy"

"Without the aid of your Yellow Directory we would be unable to take care of a large per cent of the inquiries received"

—says Mr. S. L. Bennett, president of B. & B. Accessories Corporation, Indianapolis.

Here is his letter, telling how the Yellow Directory put him in touch with the maker of an accessory whose trade name was all he knew. Read how the listing and the advertisement saved time and trouble and helped him make a sale that he might have lost.

Many thousands of other automotive jobbers, dealers and repairmen find the Yellow Directory practically indispensable.

Use Your Copy

In its pages you will find the information you need to answer the questions of your customers. Use it in your buying. Save time by consulting it first.



B. & B. ACCESSORIES CORPORATION
527 NORTH CAPITOL AVENUE
INDIANAPOLIS

DISTRIBUTORS

- C. O. Spring Bumpers Oil Tempered
- Kaystone Locking Radiator Caps
- Love Joy Shocks Hydraulic
- Hooders at
- Turns
- ada
- Chilton and Safety Signals
- Della Electric Co. Products
- Thorn Automobile Windshield Cleaners
- C. & G. and Perfection Stop Plates
- Two-Tone Electric Motors
- H. & B. Plain Nickel-plated Radiator Caps
- H. & B. Trunks and Bags
- Vases of All Kinds
- Motometers
- Dome Lights
- Smoking Sets
- Clocks
- Lanterns
- Side Lights
- Exhaust Spot Lights
- Tire Covers

September 10th 1924

Chilton Automobile Directory, 56th & Chestnut Streets, Philadelphia, Penna.

Gentlemen:—

We wish to take this opportunity to express our appreciation of the Yellow Book published by your Company. It is the greatest source of information in our office.

Whether used for purchasing or as a reference, the Yellow Directory is, as always, our right hand man and practically indispensable to us.

Just today a customer came in asking for an AutoRealite. Of course we are familiar with these spotlights, but could not remember the manufacturers' name. Upon referring to your Directory, we found through your method of cross-indexing from trade names to manufacturers' names, that it was manufactured by the Appleton Electric Company, 1714 Wellington Avenue, Chicago.

We also readily found the advertisement of the Appleton Electric Company giving sizes, prices, specifications, etc., of all models of AutoRealites, and needless to say, this saved us considerable time and trouble and enabled us to make a sale which we might otherwise have lost.

We have a reputation throughout the state of handling the newest and most up-to-date accessories and have inquiries for merchandise manufactured in all sections of the country. Without the aid of your Directory, we would be unable to take care of a large percent of the inquiries received. No consider it the most valuable Directory published and cannot speak too highly of it.

Yours truly,
B. & B. ACCESSORIES CORPORATION
By S. L. Bennett, PRESIDENT

Service DeLux

Chilton Automobile Directory

(The Yellow Directory)

Makes It Easy to Buy

Chestnut and 56th Streets

Philadelphia, Penna.

New Departure Ball Bearings

What is the Life of a Car?

There are some points, like pistons, rings and gear teeth, that must depend upon a nice fit, proper steels and good lubrication to keep the wear down as low as possible—but at scores of other points in the chassis, just how much wear is to take place depends entirely on the bearings used. If wear is to be held to a minimum, ball bearings must be on that job.

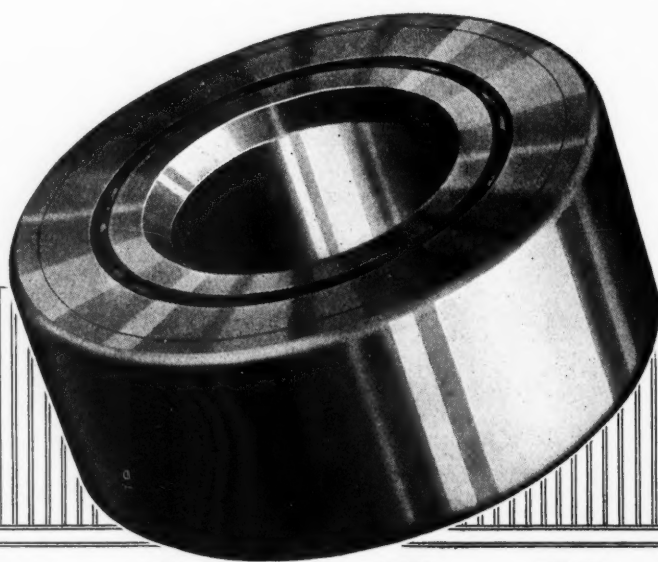
They substitute rolling contact for rubbing, sliding contact. Nothing rolls so easily, so friction-less as a ball. And when ball bearings are made as New Departure makes them, no wear occurs during the life of the mechanism they serve.

As a matter of fact, they endow the parts they support, locate and protect with a much greater useful life.

THE NEW DEPARTURE MANUFACTURING COMPANY,
BRISTOL, CONN.

Detroit

Chicago

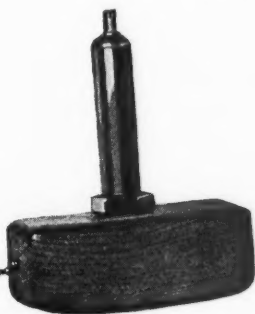


Ball Bearings Do Not Wear



This Instant-On display stand is made of metal and beautifully lithographed in colors. It is equipped with a sturdy easel for counter use. You will find it a highly successful salesman.

Saves You the Cost of a Salesman —and it does a lot of profitable work for you



Dill Standard Valve Inside

Another quick seller. 20 a, these metal boxes containing 5 insides each are mounted on a beautiful metal display stand, lithographed in colors. Boxes retail at 30 cents each. Display stand costs \$4.20.

THE minute a fellow picks up the little Instant-On "Try Me" that's chained to this stand, he sees how easily and how simply Instant-On works. That means he's sold—and sold right. There's such a startling contrast between Instant-On and the old fashioned turn—and turn—and turn cap. For Instant-On is Valve Cap and Dust Cap combined. A turn—a push—another turn, and Instant-On is on. Reverse the action and it's off. The first time a customer tries it he sees the difference.

This attractive stand holds a dozen boxes of Instant-Ons. Each box contains a complete set of 5 Instant-Ons, and retails for \$1.00. You pay \$8.00 a dozen—including stand. That means a clean 50% profit—on one of the best known, most consistently advertised and fastest moving accessories on the market.

Order an Instant-On display stand from your jobber. Do it now. If your jobber can't supply you, write direct to us and we'll fill your order at once.

THE DILL MANUFACTURING CO., Cleveland, O.
Manufactured in Canada by The Dill Manufacturing Company of Canada Ltd., Toronto

DILL

Tire Valves and Valve Parts

Rickenbacker

A • C A R • W O R T H Y • O F • I T S • N A M E

These Two Guarantee Success

Two qualities are requisite to success in any branch of human endeavor.

In the merchandising of motor cars, the two are a salable product—and individual ability.

Merchants of ability are wasting their time trying to sell cars of mediocre quality and of obsolete design.

Rickenbacker is a salable product—it is so far in advance of the rank and file in so many features, it is first choice of men who know most about motor cars.

If you are considering a new alignment; if you possess that first requisite, individual ability—

And if you happen to be located in a district where we have, as yet, no representative, then here is the other factor you are looking for.

You are invited to visit us at the factory and see for yourself the quality of this product and the splendid facilities we have for making it.

Next best thing is to write the sales department.

We are making plans for a big year in 1925.

Rickenbacker Motor Company
Detroit, Michigan

Famous "Six" Prices

<i>Sport Phaeton</i>	- - - - -	\$1595
<i>Coupe</i>	- - - - -	2095
<i>Sedan</i>	- - - - -	2195



J. o. b. Detroit—plus war tax

Vertical "Eight" Prices

<i>Sport Phaeton</i>	- - - - -	\$2195
<i>Coupe</i>	- - - - -	2695
<i>Sedan</i>	- - - - -	2795



The method of distribution of Fisk Tires is of prime interest to every tire dealer.

There are 140 direct Fisk Branches carefully located in those cities, large or small, which were selected because they are natural shipping points for the various territories.

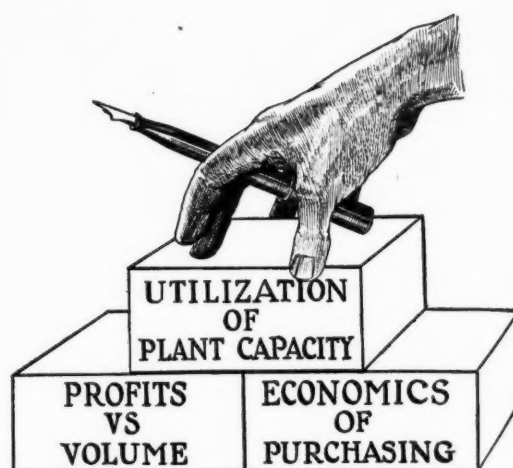
These Branches not only provide the possibility of quick shipments and prompt deliveries—and these items mean much in this day of the Balloon tire—but they bring you into closer and more personal contact with the Fisk organization.

You have the opportunity to deal direct with us and we are glad to be able to say we have established unusually personal and friendly relations with our trade.

Our line is complete, Fisk Tires are widely and favorably known, our sales policy is sound. If you are not now a part of our big dealer organization, we believe you might find it an advantage and a satisfaction to become one of us.

The Fisk Tire Company, Inc.
Chicopee Falls, Mass.

More About Profits



UTILIZATION OF PLANT CAPACITY

Turn back if you have not read the article on Profitable Use of Plant Capacity. It is the key article of this series and carries an important message for you.

- Others will treat of
2. Departments Essential to Transportation Store.
 3. How Much Is Enough Space?
 4. Displaying and Storing Stocks.
 5. To Build or Remodel.

IMPORTANT SERIES THAT WILL FOLLOW

Cost of Selling

1. Gross Margin Is Not Net Profit.
2. The Cost of Selling.
3. Overhead Must Be Met.
4. Salaries and Wages.
5. Maintenance Service as a Profitable Commodity.

A New Series Starts in This Issue

You are in business for the health of your bank account. First and last you must consider profits.

Profits haven't been what they were. Alarming decrease in many quarters has led Motor Age to conduct an extended investigation into the cause.

We have found the causes and we believe we see the remedy.

Follow the series of articles on "Profits." It started with the issue of September 18th. The first group dealt with "Profits vs. Volume," the second with the "Economics of Purchasing."

Now comes the first article on "Utilization of Plant Capacity." Read it.

Articles on the topic "Profits" are appearing simultaneously in Motor Age, Motor World, Automotive Industries and Automobile Trade Journal. The general theme is the same but the articles in each publication and their writers are different.

Plain Talks on Profits

GATES HOSE

"The Standardized Radiator Hose"



Marked by Inches
Easily Cut to Length

In cold weather, both steam and anti-freeze mixtures attack radiator hose inside. A good time to protect customers by selling the hose with the tougher rubber lining—the Gates Vulco.

Made by the World's Largest
Manufacturers of Fan Belts.

"WHITNEY"

SILENT HIGH MILEAGE CHAINS

IT'S EASY FOR YOU

Whether or not "WHITNEY SILENT HIGH MILEAGE CHAINS" were used as original equipment, there is a "WHITNEY" chain for replacement on nearly every make of car, any model.

"WHITNEY SILENT HIGH MILEAGE CHAINS" for timing and accessory shafts are stocked in all principal cities. The dealers listed below will promptly handle all of your chain replacements with these griefless chains of extraordinary long mileage.

Authorized distributors listed below.

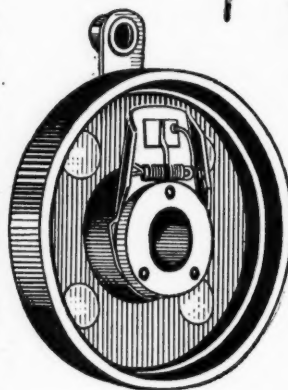
- | | |
|--|---|
| Alabama—Birmingham
Birmingham El. Batt. Co.
Av. B and 21st St. | Nebraska—Omaha
Auto Elec. & Radio Corp.
2813 Harney St. |
| Arkansas—Little Rock
Crow-Burlingame Co. | New York—New York City
L. C. Biglow & Co., Inc.
243 West 55th St. |
| California—San Francisco
A. H. Coates Co.
615 Howard St. | New York—Buffalo
Roth & Zillig, Inc.
1063 Main St. |
| Colorado—Denver
Auto Elec. & Appl. Co.
W. 13th Ave., Acoma St. | New York—Rochester
Sidney B. Roby Co.
208 South Ave. |
| Georgia—Atlanta
Alexander-Seewald Co.
81 No. Pryor St. | New York—Syracuse
Syracuse Auto Supply Corp.
311 So. Warren St. |
| Indiana—Indianapolis
Gibson Company | Ohio—Akron
The Hardware & Supply Co.
475-535 South High St. |
| Iowa—Des Moines
Brackett Co.
545 Fifth St. | Ohio—Cincinnati
Auto. Bear. & Equip. Co.
205-207 East 8th St. |
| Kansas—Wichita
E. S. Cowie Electric Co. | Ohio—Cleveland
Auto. Bear. & Equip. Co.
7823 Carnegie Ave. |
| Louisiana—Monroe
Monroe Auto Supply Co. | Ohio—Toledo
Hawley Sales Co.
624 Jefferson Ave. |
| Maine—Portland
Mank & Gray, Inc.
743 Congress St. | Oklahoma—Oklahoma City
Harrison Smith Co.
711 No. Broadway |
| Maryland—Baltimore
J. R. Hunt & Co.
Calvert & Saratoga Sts. | Pennsylvania—Altoona
Altoona Auto Supply Co.
1110 15th St. |
| Massachusetts—Boston
George C. Steil
727-A Boylston St. | Pennsylvania—Philadelphia
Auto Equip. & Ser. Co., Inc.
1421 No. Broad St. |
| Massachusetts—Springfield
E. B. Atmus Co.,
113 Chestnut St. | Pennsylvania—Pittsburgh
Pittsburgh Auto Equip. Co.
5808-10 Baum Blvd. |
| Michigan—Detroit
Auto Elec. & Ser. Corp.
91 Selden Ave. | Tennessee—Memphis
Mills-Morris Co.
372 So. Main St. |
| Minnesota—Minneapolis
Reinhard Bros. Co., Inc. | Texas—Dallas
Harrison Smith Co.
2018 Jackson St. |
| Missouri—Kansas City
E. S. Cowie Electric Co.
1818 McGee St. | Washington—Seattle
A. H. Coates Co.
1115 East Union St. |
| Missouri—St. Louis
S. G. Hoffman Mag. Co.
3874 Washington Blvd. | Wisconsin—Milwaukee
Lemke Electric Co.
505 Cedar St. |
| Missouri—Springfield
Ozark Motor & Supply Co.
308 S. Jefferson St. | |

*These distributors make it easier for you to use
"WHITNEY SILENT HIGH MILEAGE CHAINS"
on all replacements*

THE WHITNEY MFG. CO.
HARTFORD, Connecticut



What Timer Should You Stock?



One that will give you good profit and rapid turnover; that will render exceptional service to users; that is guaranteed and backed to the limit by a responsible manufacturer.

THE BELL TIMER

"Built like a High-grade Distributor"

offers not only one, but all of these advantages. Many jobbers and dealers feature Bell alone.

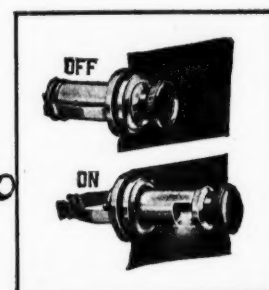
Bell is a one-piece molded bakelite timer. Solid copper contacts are molded in. Raceway is carefully machined. Brush is also solid copper and maintains smooth, even pressure at any speed. This timer requires no oiling or attention.

*Your jobber doubtless stocks
Bell Timers. If he doesn't,
write us for details.*

BELL MANUFACTURING COMPANY

13 Elkins Street Boston 27, Mass.

Makers of the new and unusual
BELL DASH LAMP
for Fords and other cars





The Perfect Combination

An Empire cold punched nut fitted to an Empire New Process bolt will banish any worry connected with assembly work.



Empire cold punched nuts are made on machines that reduce five operations to one—thus insuring an absolutely uniform accuracy of fit and flawlessness of structure.



Empire New Process bolts are made by building-up the thread in a new way without cutting. This makes the thread tremendously strong and gives it an accuracy of .0005".

Samples on Request

RUSSELL, BURDSALL & WARD

BOLT & NUT COMPANY

PORT CHESTER, N.Y.

PEMBERWICK, CONN.

CHICAGO

SAN FRANCISCO

ROCK FALLS, ILL.

Makers of Bolts, Nuts and Rivets Since 1845

GF Allsteel

The Complete Line of Office Equipment

Steel Shelving

Strength—Modern steel construction combines strength with light weight.

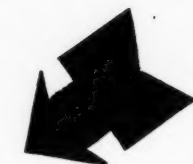
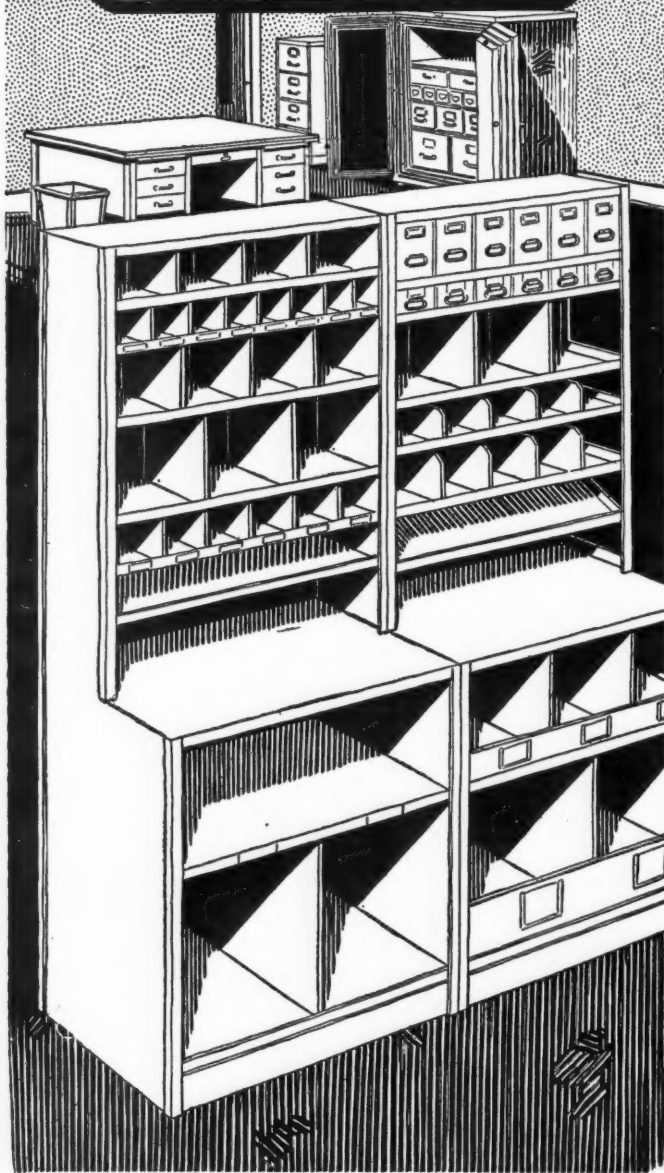
Durability—Fire-resistive—oil, water and wear proof.

Simplicity—Installed or rearranged easily and quickly, with ordinary tools.

Adaptability—Arranged to store any commodity.

Economical—10% to 30% greater storage capacity. Moved or altered without depreciation.

Shelving, Files, Desks, Transfer Cases, Safes, Counter-heights, Sectional Cases, Accessories and Supplies
THE GENERAL FIREPROOFING CO.
 Youngstown, O. *Dealers Everywhere*



Here
is
PROFIT!

YOU can make more money with Graton & Knight Standardized Leather Fan Belts than you ever expected to make from fan belts!

These splendid belts have the honest quality that makes them easy to sell. Your customers can tell from the "heft" and "feel" that Graton & Knight belts give their money's worth in service—and then some!

Made of famous Graton & Knight *standardized leather*. Resist motor heat, oil and water. Tough. Pliable. Grip the pulleys without bearing destroying tension. Hold their shape. You can unhesitatingly recommend them as the most durable, long-wearing belts money can buy. Every time you sell one you make a friend for your business!

Graton & Knight belts are furnished in Flat, "V" and Link "V" types. Made to specifications for every car. *And they pay a mighty generous profit!* Write your jobber to-day for prices and particulars.

THE GRATON & KNIGHT MFG. CO.
Tanners—Makers of Belts and other Leather Products
 Worcester, Mass.



GRATON & KNIGHT
 Standardized
LEATHER BELTING



Keep Out Cold Air and Wind

Rie-Nie PEDAL PANTS

Absolute Necessity for Every Motorist!

NO COLD AIR, wind or snow can zoom up through the openings around pedals and brake—freezing the feet of the driver, when Rie-Nie Pedal Pants are used. Most important invention for the comfort of motorists in decades. For years drivers have stuffed these openings with paper, rags, felt, etc. to keep the cold out. This equipment does away with these inferior home-made makeshift contraptions. Rie-Nie Pedal Pants keep feet "warm as toast."

Sells on Sight.

It does. Every motorist recognizes the merit and necessity for this equipment the minute he sees it. It is the fastest selling accessory ever invented. A fast seller in a dull season. Stock them. Display them. Sell them. Coin profits from this winter necessity of your customers. Quick Sales. Big Profits. Get Yours. Order Today. If your jobber can't supply you, wire us direct.

- 1.—Sleeve Fits Snug Around Pedals and Levers—Rubber permits Easy Operation.
- 2.—Fits Snug and Tight to Floor of Car—Beneath Regular Floor Mat.

\$1.25 For
Fords

\$1.50 For
Other Cars

Manufacturers of Quality Products the Motorist Needs Since 1910. Send for Complete List of Our Line.

DURKEE-STWOOD Co.
MINNEAPOLIS, MINN. U.S.A.



Broadcaster Service

If you are in the market for something that you do not find advertised in this paper, tell us and we will promptly send you a list of the leading manufacturers.

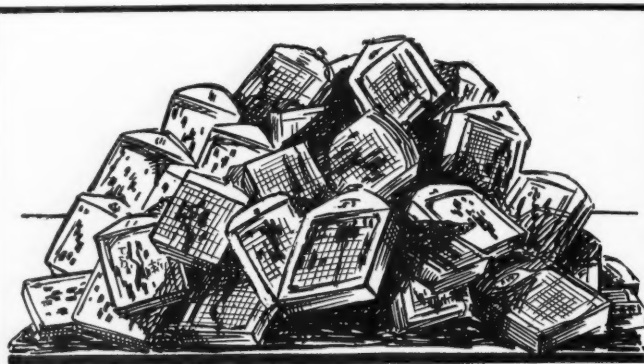
If you want anything, and do not know how to get it or to whom to send your inquiry, write us and we will do our best to help you.

For complete Broadcaster Rates in Motor Age, Motor World, Automobile Trade Journal, Automotive Industries, Distribution & Warehousing, address the Class Journal Company, 5 South Wabash Ave., Chicago, 239 West 39th St., New York, or Chestnut and 56th Streets, Philadelphia.

The Broadcaster

A DEPARTMENT THAT
WILL FIND WHAT YOU WANT

The Broadcaster Department Appears in This Issue on Page 93.



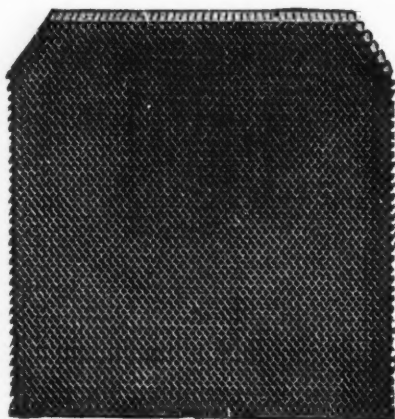
Winter's Toll! Your Opportunity!

Cold weather has just arrived—there is still time for you to get your share of this winter's radiator replacement business.

Neglect and slippery roads send thousands of radiators prematurely to the junk heap every winter. Just another case of "an ill wind, etc." For these radiators must be replaced and therein lies the good—for the dealers who make the replacements!

Get your share—Fedders have made it possible for you to handle this business without tying up capital in a large replacement stock. Simply stock a few of the more popular types. Order the others as needed from our conveniently located branches. Our 24-hour delivery means prompt service to your customers under this plan!

"The Burst Proof From Freezing Core"



Shallow Cores for Replacement

In addition to an attractive sales plan, you have numerous sales features. The Fedders Shallow Core is shallower, lighter and stronger than other replacement cores. It has larger water passages which provide unsurpassed cooling efficiency. It will not burst from freezing—the greatest replacement core ever built.

Profit through this winter's toll—write for details at once!

FEDDERS MFG. CO.
Buffalo, N. Y.

Branches in Cleveland, Detroit, Indianapolis, New York,
San Francisco

PACIFIC RIM TOOLS

have no imitators, for even a good imitation would infringe upon patented features exclusively "Pacific."

When it's time to retire, as the saying goes—rim removing with the Pacific Rim Tool is as simple, quick and safe as modern mechanics can possibly make it. The hinged arms adapt themselves to any size split rim. The jack screw principle of leverage, has the power to lift the most stubborn rim from the tire.

The sale of these rim tools justify all good things said in behalf of the Pacific. Find out for yourself.

\$10.00 List



**Pacific Rim Tool
Company**

16606 Waterloo Rd. 2339 11th Ave., N.
Cleveland, O. Seattle, Wash.
Export Office: 1834 Broadway
New York City

**If you want to sell or rent your business
you can**

- (1) Put signs in your windows—to attract the attention of those who pass by.
- (2) Put an ad in your daily paper—to be seen by some of your local prospects.
- (3) Put an ad in your business paper to be read by others in your line of business, some of whom may be looking for just such an opportunity as you have to offer.

There are thousands of men in this industry who are ambitious to be their own boss—they have saved their money to buy a business of their own and might pay you a higher price than you have yet been offered.

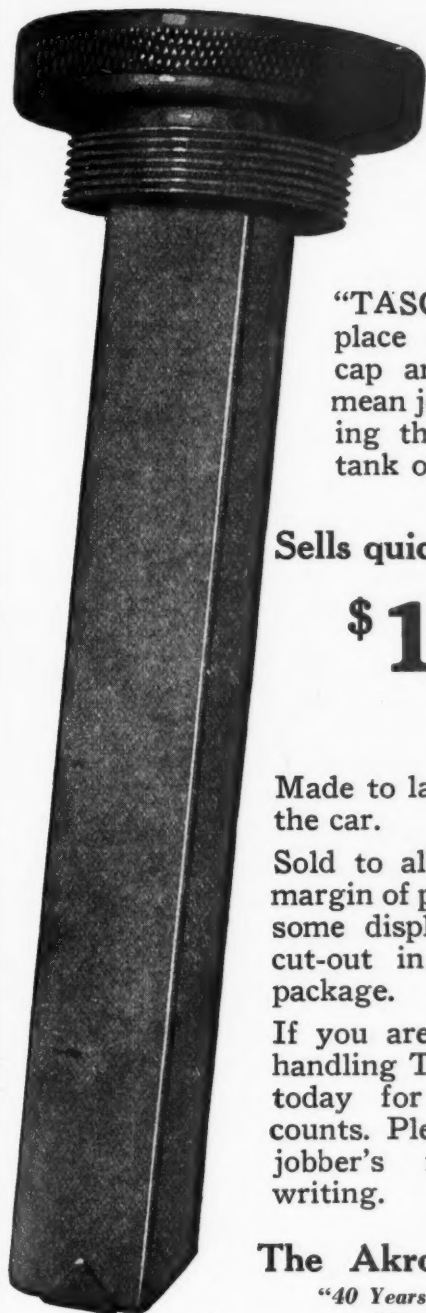
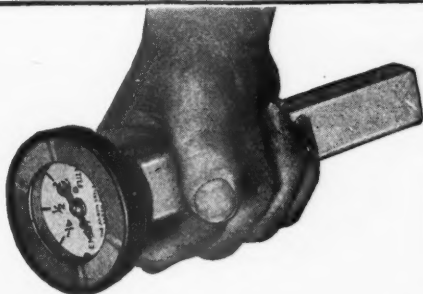
The cost is too small to cause hesitation. Undisplayed ads are only 6c a word. The quicker you send your copy the sooner the dividends on your investment.

The Broadcaster
A DEPARTMENT THAT
WILL FIND WHAT YOU WANT

The Broadcaster Department Appears in This Issue on Page 93.

Winter Sales are Easiest

Makes
a fine
Christmas
Gift



"TASCO" takes the place of the filler cap and saves the mean job of measuring the gas in the tank on a cold day.

Sells quick at

\$1 25

RETAIL

Made to last as long as the car.

Sold to allow a liberal margin of profit. Handsome display card and cut-out in each dozen package.

If you are not already handling TASCO, write today for liberal discounts. Please give your jobber's name when writing.

The Akron-Selle Co.
"40 Years in Business"
Akron, Ohio

TASCO GAS GAUGES

FORD, CHEVROLET and OVERLAND



No.
400

for
Gas

The Truck Headlamp



No. 403



No. 404

Operators of heavy truck fleets give preference to gas lighting equipment, especially in cases where hauling is done at night. It solves the problem of overtaxed batteries and delays due to necessary recharging.

Victor Gas Lamps for trucks are built for heavy going in which they will be called upon to withstand vibration and shock. They are drawn from high grade heavy gauge steel with all parts riveted. No solder is used.

They are designed to insure perfect ventilation and combustion. Door is hinged at top and held at the bottom with an adjustable catch to prevent rattle. The lens is plain but of double strength and passes all lighting requirements.

Made in several sizes—all finished in hard baked enamel. Write for details and prices.

In line with this headlamp equipment we recommend our No. 461 Tail Lamp and License Plate Bracket which is built for rugged truck service. It has been approved by the Eastern Conference and is legal for use in all states.



The Victor Line

The Cincinnati Victor Company

714 Reading Road,

Cincinnati, Ohio

Jack—For Balloon Tires



Patent
Applied
For

The Springfield Jack No. 9 especially designed for balloon tires—

Double Screw—Ball Bearing Low Placement—High Lift. Height when closed, 7 inches. Extends to 17 inches.

Convenient handle excellent workmanship and quality.

Dealers—Jobbers—Write us for discounts

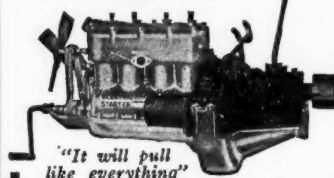
THE SHAWVER CO.
Springfield, Ohio

Weight 8 pounds
Capacity 1 ton
Price \$4.75

Replace Ford Transmission With SIMPLEX 3 SPEED

MORE POWER FOR
FORD CARS and
TRUCKS

26 to 1 in low in
our new type "CT"



"It will pull
like everything"

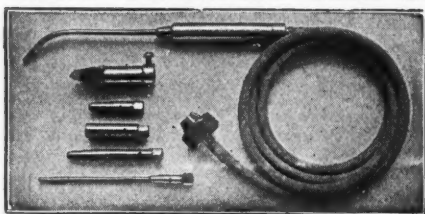
Genelite bearings. No cutting or machining—installation easy.
E. D. & A. F. Cronk, Inc., 140 Hotel St., Utica, N. Y.

Have three speeds forward and one reverse, replacing the regular Ford transmission—drums, bands and all. The low speed is lower than the Ford, therefore, more power—the third is the same as the Ford and the second is half way between.

It's ruggedly built with oversize alloy steel gears. Multiple disc clutch. Foot brake on jackshaft outside of case. Hyatt Roller and Genelite bearings. No cutting or machining—installation easy.

THE BEST TOOL IN THE SHOP!

Every
garage
needs
one



Handy
for the
small
jobs

Every purchaser of TORIT ACETYLENE TORCH No. 13 says it beats anything they ever saw. We guarantee it. USES NOTHING BUT ACETYLENE. Simply connect to Presto tank, light gas, and the outfit is put to work. Complete as above, with connection for Presto auto tank, and full instructions.

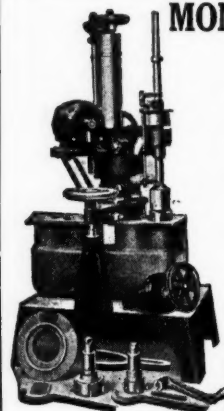
\$7.50 in U. S. A.

\$10.00 in Canada

Order from your Jobber's salesman, or

ST. PAUL WELDING & MFG. CO., 169 W. Third St.,
St. Paul, Minn.

MONEY MAKING MACHINES



STORMIZING machines are truly money makers. They enable you to make biggest profits on every overhaul job. They handle all your cylinder renewing, accurately and efficiently, enabling you to turn out the high quality work that wins your customers' lasting approval. The automatic time and labor saving features make big profits possible by lowering operation costs.

Write for the Storm Book,
"Modern Cylinder Methods"

STORM MFG. CO.
406 A Sixth Ave. So. Minneapolis

KOCH KREEPER No. 3

Supports the head in three different positions while working under the car. Eliminates body fatigue and neck cramps. Padded head rest can be adjusted to any position by slight pressure while worker is on creeper. Sturdy and durable. Will last indefinitely. Heavy wide wheel casters

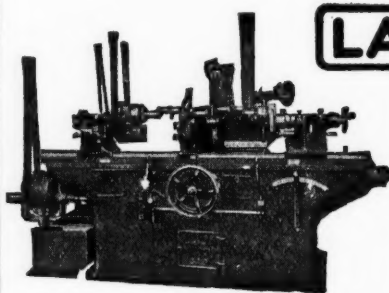
—ball bearing swivel. Price East of Rockies, \$5.00—West of Rockies \$3.50. Cash with order; shipping charges prepaid. Satisfaction guaranteed, otherwise return Creeper and we will refund money and postage. If your Jobber does not handle Koch Kreeper write direct.

FT. RECOVERY STIRRUP CO.
Ft. Recovery, Ohio



PAT. PENDING

LANDIS



The LANDIS 4-A Special GARAGE Grinding Machine is built ESPECIALLY for repair shop work. You don't need a manufacturing machine—don't get one. The 4-A Special is perfect for repair shops. Quick and easy change from job to job. Simple to operate. ACCURATE. Built by world's largest makers of grinding machines. More value for your money. Catalog.

Landis Tool Co., Waynesboro, Pa.

New York Office—30 Church St.

Apex Vernier Dial

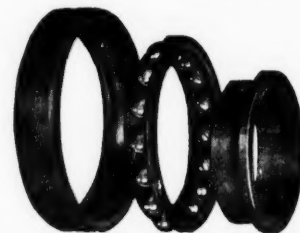


Geared condensers requiring many holes in the panel and a careful lineup of pinion shafts are a waste of time and a bother. This marvelous instrument provides the fine adjustment for tuning in distant stations. The ratio is 10 to 1. It can be quickly applied to any shaft.

This Apex Vernier Dial is a product of the long and favorably known Apex Electric Manufacturing Company, who are producing it under the same exacting principles which have marked the great success of their Automotive products. Every accessory dealer should have a radio department. And no radio department is complete without the Apex Vernier Dial and other Apex Radio Products.

Automotive equipment dealers should write at once for complete information relative to this money-making item.

APEX ELECTRIC MFG. CO.,
1410 W. 59th St., Dept. 918 Chicago



The Bearings Company of America, Lancaster, Penna. Angular Contact Thrust Bearings. Angular Contact Radial Bearings. Manufacturers of Thrust Ball Bearings of all types. Let our Engineers help to solve your Bearing problems.

The Bearings Company of America,
Lancaster, Penna.

Detroit, Mich. Office,
1012 Ford Bldg.



Doubling the Value of the R. I. V. Distributor's Franchise

RECENT car and truck equipment contracts won by R. I. V. ball bearings double the value of the R. I. V. distributor's franchise. The conclusion of negotiations now under way will add still further to its desirability.

In the Central West we have openings for more distributors who are able to do substantial business. Get in touch with us right away—you may be the fortunate one.

With quality supreme, price proposition attractive, and the new developments above referred to, R. I. V. offers the best ball-bearing resale opportunity in the country for 1925.



Fisk Building, Broadway at 57th St., New York City

Branches: Chicago, Detroit, San Francisco

Leventh Hour Orders for K-D Holiday Wrapped Lamps

If you order at once, we can still ship in time for holiday selling . . . so better get busy and send your orders.

Profit by the big spread of the holiday fad for K-D Lamps as Xmas gifts. Orders received without delay will be shipped promptly.

DRIVING LAMP

A drum type lamp, with special bracket, can be attached to frame of car, on fender, cross rods or cowl of car, and can be so wired that it will light when head lamps are dimmed. Light can be thrown to side of road so that an approaching car may be passed in safety.

Construction is double shell type, outer body is drawn in one piece from suitable gauge metal, all plated parts made from brass highly polished and finished. Reflector is parabola shaped, made from brass, highly polished and plated. Bulbs are 6-8 volt. 21 c.p. "C," either double or single wiring system. Finished in black and nickel.



THE K-D LAMP CO.

Cincinnati, O.

DRUM TYPE SPOT LAMP

Specially designed, to harmonize with latest Head Lamps. Made in two finishes, ALL NICKEL or BLACK AND NICKEL.

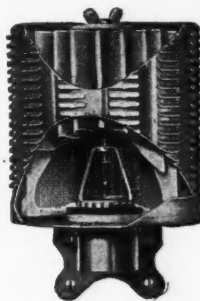
Lamp is double shell construction, made entirely from BRASS, including bracket, therefore will not rust or corrode.

The bracket is made in two types, for either closed or open car, the open car type is of recent design and suitable for use on either a round or square windshield.

Cord, four feet long, furnished for attaching. Each lamp packed in individual carton.

PROTECTOMOTOR
REG. U.S. PAT. OFF.
Perfect Positive Protection

Filters ALL dust, sand and grit out of air supply to motor and carburetor. No moving parts to wear out and get noisy.



99⁹/₁₀
EFFICIENT

The Protectomotor prevents more than 75 per cent of the engine troubles that make many car owners wonder if any car is worth the price paid for it. Protectomotor eliminates trouble for dealers by keeping all dust, sand and grit out of the motor—by reducing wear on moving parts of the motor by more than 75 per cent.

Special discounts to dealers who desire to increase their number of satisfied customers—dealers who desire to make every sale an asset rather than liability—dealers who want to make customers boosters instead of knockers.

Staynew Filter Corporation

ROCHESTER, N. Y.


A motor without a Protectomotor is like a watch without a case.



Completely Gemco made, the big selling line

GEMCO MFG. CO.
Milwaukee, Wis.


BUMPERS



Lowest Priced Method of Efficient Spring Lubrication

R & C Oiler comes in 30 ft. rolls. One roll will equip from 6-12 cars. Installed with pliers in few minutes. Real dealer opportunity. Good profits. Write. Exclusive distributors wanted.

R. & C. MFG. CO.
Parkersburg, W. Va.




Electrolock

YOU CAN'T FORGET TO LOCK IT

Automatic, safe and positive protection against theft. Approved by Underwriters' Laboratories. Earns lowest theft insurance rate.

Mitchell Specialty Co., Philadelphia, Pa.




BUTLER SPRINGS AND THE ACE OF CLUBS ALWAYS WIN

Butler Springs are made of very fine grade steel. They are carefully heat treated and tested for hardness and strength.

Order your Ace of Springs today.

BUTLER AUTOMOTIVE SERVICE CO.
101 D. ST. EASTON, PA.




Kokomo LONG-LIFE TIRES AND TUBES

Kokomo Long Life tires and tubes make money for dealers who handle them.

Kokomo Twin-Grip Fabrics
Kokomo Two-Grip Cords
Kokomo Everlast Red Tubes
Kokomo Standard Gray Tubes


KOKOMO RUBBER CO., Kokomo, Indiana
131 South Main St.



Spring-steel, Oil-tempered Bumpers in Six Complete Styles. Guaranteed Satisfactory Attaching Arms for all Leading Makes of Cars.


We invite comparison in appearance, quality and price.

THE BELLEVUE MANUFACTURING CO., Bellevue, Ohio



Battery Plates

CONTINENTAL BATTERY CO.,
3201 Papin St., St. Louis, Mo.



QUALITY—PROFIT—TURNOVER

American Hammered Piston Rings

American Hammered Piston Ring Company
Baltimore, Maryland




NO TOOLS—It's Self-Closing

Repair Link for Broken Cross Chains

A Flower City Self-Closing Link attached with fingers to loose ends of broken chain closes and locks on first turn of wheel. Stops clanking—saves fender—low-priced. Box of 10 Links retails for 25 cents. Write for samples and discounts. Distributors wanted.


FLOWER CITY SPECIALTY CO. Rochester, N. Y.



The New BETHLEHEM MOTOR TRUCKS

1 Ton, 2 Ton, 2½ Ton, 3½ Ton


Bethlehem Motors Corp. of N. Y. Allentown, Pa.



Bosch

Bosch Franchise details will be sent to any Distributor or Service Station on request.

ROBERT BOSCH MAGNETO CO., INC.
Otto Heins, Pres., 109 West 64th St., New York



A MONEY MAKER FOR JOBBERS DEALERS DISTRIBUTORS

When a car owner sees this piece of equipment he wants it—he realizes what a great convenience it will be. This accounts for the record breaking sales now being made.

DUPLEX

Second Spare Tire Carrier and Rim Tool carries second spare—locks both spares against theft—attached or removed without tools—tires cannot chafe—contracts and expands rim when changing tires. Only one size to stock for all cars. Write for details.

TRIPP-SECORD & CO., 606 Kerr Bldg., Detroit



ZENITH CARBURETOR

More Power Less Fuel

Zenith - Detroit Corporation, Detroit, Mich



NO-LEAK-O PISTON RINGS

"NO-LEAK-O"

Won't Leak Because They're Sealed With Oil. No-Leak-O Piston Rings are making money for dealers everywhere. Their "OIL SEALING" groove—found only in No-Leak-O—packs an oil film in between piston and cylinder walls like "packing" in a pump. Oil and gas stay where they belong. National advertising is helping the dealer sell No-Leak-O. It will pay you to stock No-Leak-O at once. Price 35c and up.

Service Division—Oil Ring Department 376
THE PISTON RING COMPANY, MUSKEGON, MICH.

See the **Broadcaster Department**

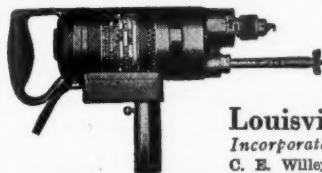
Page 93



REQUIRES ONLY HEAT

SAMPLE FREE

Get This "Pioneer" \$65 Garage Special



Electric Drill and Valve Grinder

Greatest time and money saver,
as well as money maker, for
your shop—

"It Will Do The Work"

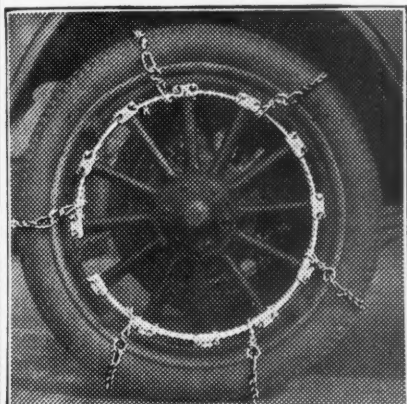
Louisville Electric Mfg. Co.
Incorporated Louisville, Ky., U. S. A.
C. E. Willey, Pres. J. B. McFerran, Secy.-Treas.



A SAVEUR spring would save
your Ford springs — \$6.50

The New Era fame as designer and manufacturer of
BETTER spring bumpers is so wide that some peo-
ple have forgotten that the company is the origi-
nator of tire carriers, wheel carriers, special springs
and other accessories. They are better, too.

NEW ERA SPRING & SPECIALTY CO., GRAND RAPIDS, MICH.



This is the Season

The big season for non-skid
chains is at hand. Dealers
who sell the

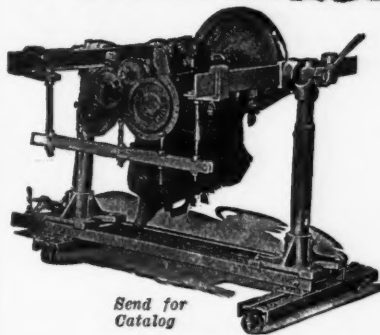
Travelon Non-Skid Attachment

will make more money. They
sell easily. Owners don't
have to jack-up their cars
when they use these long-
lived non-skid chains.

Write for prices

The
Shaw-Walton Co.
Pontiac, Illinois

Get a Manley



Universal Engine stand.
In a class by itself. The
universal suspension bar, a
fitting suspending 75% of
all motors in use, the slid-
ing brackets which adjust
themselves to all motor
suspensions without holes
in the side rails, the height
adjustment, etc., are para-
mount features.

Plain and Geared types.
In three minutes you can
convert into an Axle Stand
superior to any special
Stand. Special Fittings
for Cadillac, Dodge, Ford,
etc.

Send for
Catalog

MANLEY MFG. CO., YORK, PA.

Non-Korod

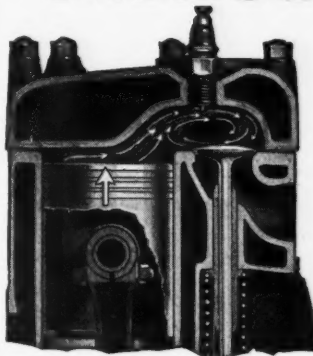
GUARDS
BATTERY LIFE

Every battery terminal should be thoroly cleaned and NON-KOROD
applied. Prevents corrosion and sulphation. Increases battery life.
Insures full service. Great saving. Will not become brittle. Always
efficient. Jobbers and Dealers can supply the trade.

Write for literature and prices, mentioning jobber's name.

National Cable Compound Co., Inc., Mitchell, Ind.
PREVENTS CORROSION
SULPHATION
SHORTING

The Ricardo Head



A New Era Is Here

There is now no excuse for
a modern gasoline engine to
knock when using ordinary
gasoline. It is the Ricardo
Head that makes this pos-
sible.

WAUKESHA
Motor Company
ENGINE BUILDERS
Waukesha, Wisconsin
New York, N. Y.

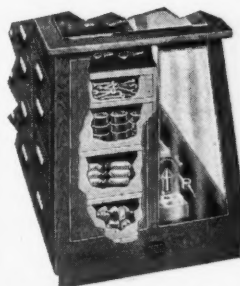


Curtis Pneumatic
Machinery Co.

1527 Kienlen Ave.
St. Louis, Mo.

Yes! Outperforms any car in its class GARDNER

BUILT BY THE GARDNER MOTOR CO.—BUILDERS OF VEHICLES SINCE 1882



THE SHERER ACCESSORY DISPLAY CASE

is making increased sales of profit-
able accessories for the thousands of
retailers who are using it.

Built in four lengths and with
either drawer or shelf storage as
optional equipment there is a size for
every salesroom.

Our liberal payment plan makes it
easy to own and after it is installed
the extra profits more than take care
of the monthly payments.

For complete information write us
today on your business letterhead.

SHERER-GILLET COMPANY
1701-1709 So. Clark St., Chicago, Ill.

Illustration shows a broken
away end view of case. Note
drawer storage for stock of
items on display in front
and top section of case.



Real High Tension Ignition for Ford Cars

Varley coils eliminate nearly all chronic ignition trouble. Save gas. Add power. Keep plugs clean. Stop misfiring. Save repairs. \$2.50 each. Write for full particulars.

The Autocoil Co., Jersey City, N. J.

Buick Continues Hall Endorsement

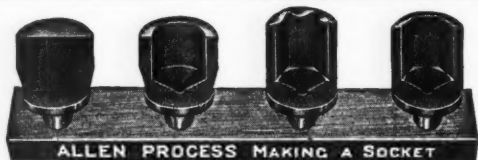
After using Hall Hones for over one year Buick test out the New Hall Hone and approve of it. It is the only Hone endorsed by Buick.

THE HALL CYLINDER HONE CO.
435 Dorr St., Toledo, Ohio



Johns-Manville BRAKE LINING

Cold-
Drawn
Sockets



ALLEN
Wrench
Sets

ALLEN PROCESS MAKING A SOCKET

The Allen Manufacturing Company, Hartford, Conn.



IT'S EASY TO SELL

"The only oil ring with a
mileage guarantee"

"Sav-Oil" is stamped on bottom of every ring

The Sav-Oil Ring Mfg. Co.

1037 S. Figueroa St., Los Angeles

Over 110,000,000

TIMKEN Tapered ROLLER BEARINGS

Have Been Manufactured

Jacobs ROAD-LITE

Lights the way to safety

Lights up the right hand side of road 60 to 70 feet ahead. Can't shine in other fellow's eyes. Invaluable for night driving.

Jacobs Auto Safety Lamp Co., Blacksburg, Va.



Frontenac
CYLINDER HEAD

PERFECT PERFORMANCE

The remarkable showing of the three Fronty-Fords in the 500 mile race was due solely to the Frontenac Cylinder Head. This head is adapted for use on YOUR Ford by its designer and builder, Arthur Chevrolet. Book, "How to Build a Fronty-Ford," \$2; free with orders of \$50 or more. Write for FREE catalog.

CHEVROLET BROS. MFG. CO.
410 W. 10th St. INDIANAPOLIS, IND.

Send U. S. Your Armature Repair Work

FORD
ARMATURES
REWOUND
\$2.00



MOST ANY
TWO UNIT
GENERATOR
ARMATURE
\$5.00

ALL WORK GUARANTEED—WRITE FOR PRICE LIST
U. S. AUTO SUPPLY CO., 3845-49 S. WABASH AVE., CHICAGO

RAMCO Cushion INNER RINGS

fit behind piston rings and keep them in perfect contact with the cylinder walls at any motor speed or temperature.

RAMSEY ACCESSORIES MFG. CORP., ST. LOUIS, MO.

Big money in this service

Dealers and shops make big money through the control of a franchise which entitles them to the exclusive use of the patented "KLEAN RITE" system of washing and polishing automobiles.

This system has turned a job into an impressive, highly profitable business.

Write for full particulars

Klean-Rite Auto Laundry Company

1710 East 75th St.

Chicago, Ill.



Kelso

BRAKE LININGS and CLUTCH FACINGS

Always used where safety and service are the first and only consideration.

KELSO MFG CO.,

TRENTON, N. J.

Have you seen the new Gilmer Fan Belt?

It's a V shaped belt, constructed of tough fabric and a new special rubber compound. Sizes for all popular cars using V or grooved pulleys. Write for prices and complete information.



L. H. Gilmer Co.
Philadelphia

"It's a Gilmer Product—you
can depend on it."—Happy
Van, the Gilmer man.

Gilmer

WELCO "NEVA-LOST" GAS TANK CAP \$1.50

The Welker-Hoops Mfg. Co., Middletown, Ct.

BATTERY SERVICE EQUIPMENT!

UNITRON
Rectifier

PORTOSTAT
Test Set

FOREST ELECTRIC COMPANY

New and Wilsey Streets

NEWARK, N. J.

Lorentzen Headlight Kontrol

AN AUTOMOTIVE
NECESSITY THAT SELLS

LORENTZEN HEADLIGHT KONTROL, INC.
60 Grand St. New York City.



NEW! **Kokomo** WINGS FOR CLOSED CARS

WRITE TODAY!

Manufactured by—

Kokomo Automotive Mfg. Co., Kokomo, Indiana
Exclusive Sales Representatives—
THE FULTON CO., Milwaukee, Wis.

TEMCO

Portable Electric Tool

The highest grade for the automotive trade.

The Temco Electric Motor Co.
711 Sugar St., Leipsic, Ohio



Takes Off Wheel in a Jiffy C. & G. Wheel Puller

Wonderful time saver for the busy shop. Screw Puller on hub, apply pressure and off comes wheel. No stripping of threads. No straining of wheel or brake drum. Guaranteed. Sold on money refund basis. Order through your jobber or direct. Puller \$12.00—Adapters \$2.00 each. State which cars you service.

The C. & G. Wheel Puller Co., Inc., Wellsville, N. Y.

MONOGRAM ORIGINAL SELF LOCKING RADIATOR CAP

GENERAL AUTOMOTIVE CORP., 600 W. Jackson Blvd., CHICAGO

THE BLIND MAN CAN HELP SELL CARS

Chas. W. Rice can help you sell your cars by adding to their appearance and comfort with a set of window blinds, one rear and two side, at a cost of \$15.00 with liberal discount to dealers. We use either fine quality silk or washable fabric in colors that harmonize with upholstery. Shades are mounted on metal rollers complete with nickel plated brackets.



ready to install. Send us name, model, year of car and the exact glass measurements. If you advise us of your probable monthly requirements, we can assure prompt delivery when needed. Write today for details and samples.

CHAS. W. RICE & CO.
319 East Third St.
Uhrichsville, Ohio

LITTLE WONDER VALVE SPRING COMPRESSOR

THE MOST EFFICIENT VALVE-TOOL

SAVES TIME SAVES LABOR
Will work on 95% of all cars. Three sizes of Spring Holders accompany The Little Wonder.

Fully guaranteed. Mailed, C.O.D. \$7.50
The Little Wonder Valve Tool Co.
P. O. Box 1028, Joliet Ill. 605 Oneida St.
Motor Tool Specialty Co., Distributors



UNIVERSAL HOSE CLAMP

Adjustable. Two sizes will clamp any hose of any diameter. Made from cold rolled steel out of wire. No rough edges to cut hose. Put on in less than a minute. Everlastingly leak-proof. Order Universal Hose Clamps. Trademark on every clamp and carton. Get them from your jobber—or write us.

UNIVERSAL INDUSTRIAL CORP.

Hackensack, N. J.

**"The Best-Equipped Shop
Gets the Business"**



Dash Clock Value

The Minute Meter is biggest money's worth ever offered the trade. Fits any dash, wood or metal. Dust and vibration proof. Accurate. Guaranteed. Made by clock makers of forty years' experience. Take off to wind and set in a jiffy. Radium Dial \$3.50. Canada prices add \$1.00. Fast, sure-fire seller. Best ever for the money—order now.

\$2.50

The LUX CLOCK MANUFACTURING Co., Inc.
Waterbury - Connecticut - U.S.A.

WEL-EVER

"OIL CONTROL" PISTON RINGS

The Motor Necessity That Has Made Good
Backed by Seven Years' Satisfactory Service

THE WEL-EVER PISTON RING CO., TOLEDO, OHIO
Sold most everywhere. If your dealer cannot supply you write us.



They work

**WATSON
STABILIZATORS**

JOHN WARREN WATSON CO.
Phila.: 24th & Locust Streets
Detroit: 51-53 Canfield Ave., E.

Let us send you our FREE Catalogue on

Huetter's Fly-Wheel Gear Bands

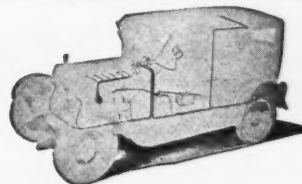
Huetter Machine & Tool Co.

546 Kentucky Ave.

Indianapolis, Ind.

Packard Cable

The Packard Electric Co.
Warren, Ohio



DO MOTOR RE-CONDITIONING AND EARN BIG MONEY!

You can ream and hone an average cylinder block the factory way in fifty minutes. Do the work without removing the engine, quickly, efficiently and economically. All you need is

FOSTER-JOHNSON Re-Conditioning Equipment

Cylinder and Piston Reamers, Hones, Kylin General Purpose Reamers and Reamer Sharpeners, all included.

Write for Foster-Johnson Station Manual and Tool Catalog

FOSTER-JOHNSON REAMER CO.

1310 Boardsley Avenue.

Elkhart, Ind.

KISSEL

CUSTOM BUILT

The Kissel Dealer
does not meet competition. He makes
others meet it.

KISSEL MOTOR CAR CO., Hartford, Wis.

TAKE THE END-PLAY OUT!

—WITHOUT PULLING THE MOTOR



Pat'd 7-22-'22

THE C. A. ADJUSTABLE CENTER BEARING CAP corrects Ford crankshaft end play and sets magneto for highest efficiency without removing the motor. Easily and quickly installed. Guaranteed for one year. List price \$3.75. Ask your jobber or dealer or write us direct.

ADJUSTABLE BEARING CO., Inc.
Dept. M. Brazil, Indiana

JOHNSON Gas Appliances
 Metal-Melting Soldering Heat-Treating
JOHNSON GAS APPLIANCE CO.
 Cedar Rapids IOWA
 Pacific Coast Repr., C. B. Babcock Co., San Francisco, Calif.
 New York Office—277 Lafayette St.

Isolators
 Lock
 Plates.
 An
 Exclusive
 Vesta
 Feature



THE ONLY ONE

A selling feature—and a very essential feature, too, are VESTA BATTERY ISOLATORS—a mark of merit in Vesta Batteries for the past 8 years. Write for the "Book of Facts" and details.

Vesta Battery Corporation
 Chicago, Ill.

We Make RADIATOR CORE EQUIPMENT

For the Complete Manufacture of
RADIATOR CORES

Ask Us About This Equipment
 We make the best radiator test plug.

RADIATOR ENGINEERING CO.

626 Nesselwood Ave.

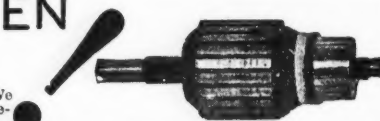
Toledo, Ohio

REPAIRMEN

Here's a new
 source of profit!
 Send us your rewind jobs. We
 are "Armature Winding Specialists."

Profit for you in our service. Ford generator armature rewind—\$1.95. Other prices in proportion. All work guaranteed. Write for catalog and prices on all generators.

H. M. FREDERICKS CO., Lock Haven, Pa., U. S. A.



ECLIPSE Safety SHADE

Instantly adjusted to any desired shading position with one hand from driver's seat. Makes night driving safe. One size for all cars. Write at once for our plan of distribution and full details.

SUBURBAN TRANSIT CO., Plainfield, N. J.
 Subsidiary of Spicer Mfg. Co.



Noiseless Timing Gears

Install quietness — Cloyes NOISELESS Timing Gears. They give the motor a soft, even "purr"—permanently.

Cloyes Gear Works
 1614 Collamer Ave., Cleveland, O.

Sales Representatives
 United Autoware Co., Fisk Bldg., New York City
 N. Lowenthal, Box 952, Ft. Worth, Texas

"It pays to buy a Kellogg"

KELLOGG

COMPRESSORS

ROCHESTER, NEW YORK

Pedrick
 HEAT-SHAPED
 PISTON RINGS

Heat shaped to insure perfect roundness, sold at almost the price of a snap ring.

Wilkening Mfg. Company
 15th and Mt. Vernon St., Philadelphia, Pa.

WATERVLIT SPIRAL EXPANSION ALIGNING REAMERS

For piston pin bushings on all cars and trucks. Assure perfect alignment.

Will Not Chatter

Give a full bearing surface with a mirror-like finish.

Ask your jobber or write for literature

WATERVLIT TOOL CO., Inc., 1037 Broadway, Albany, N. Y.



"Equal Strength — Full Length"

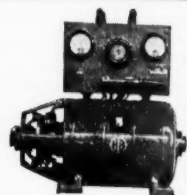
with **Stewart** DOUBLE BAR Bumpers

An Aristocratic Bumper at a Democratic Price

8 Hour Constant Potential Battery Charging Pays Big!

You can make \$150 to \$300 monthly with HB 8 Hour Battery Charging. \$35 cash brings you complete HB 8 hour charging outfit. Thirty day free trial. HB patented Internal Voltage Regulator absolutely prevents reversing. Saves current. Start now to make big profits with HB 8 Hour battery charger. Write today for free bulletin. **HOBART BROS. CO., Box AR 44, Troy, Ohio.**

Small Cash Investment - Increased Profits Carry Balance



Now offering both the matchless Peerless Eight and the Superb Peerless Six

PEERLESS



The "Big Four"

A complete car washing service. RUBBER COVERED—IMPOSSIBLE TO INJURE CAR. Used in connection with our Little Giant Water Savers, or can be applied to any 1/2 in. or 3/4 in. valve. Rubber Nozzle—for full water flow. Spray Nozzle—for general purposes. Spout Nozzle—for cutting mud from fenders, etc. Slot Nozzle—a sheet of water covering a large surface with force. PRICE—Set of four Nozzles, \$2.00 less dealers discount. **The Gaylord Manufacturing Company Paterson, N. J.**

ALMOND

"STRAIGHT LINE" DRILL CHUCKS

When buying Portable Electric Drills be sure to look for the distinctive ALMOND CHUCK, which may be easily identified by the "STRAIGHT LINE" milling on the chuck body.

Write for complete information regarding the new ALMOND "STRAIGHT LINE" CHUCKS.

T. R. Almond Mfg. Co., Ashburnham, Mass., U. S. A.



\$5

Wood-Imes

Water Circulating Pump For Ford Cars and Trucks

Is as reliable as the Ford Car itself and assures a positive cooling system that constantly functions. No more overheating—No more freezing in travel—Made engineeringly correct of best materials—quickly and easily installed. Write for Dealer Discounts and complete information.

WOOD-IMES MFG. CO., MINNEAPOLIS, MINN.
 Formerly Mid-West Mfg. Co.

Thirty-seven
BRANCHES
AHLBERG BEARING COMPANY
 321 EAST TWENTY NINTH STREET, CHICAGO ILLINOIS

The Broadcaster

A Department that will Find What You Want

PARTS

HOUSE OF A MILLION AUTO PARTS

THE LARGEST STOCK OF NEW AND USED CAR AND TRUCK PARTS IN THE WORLD. WE HAVE EVERYTHING.

New and Used Motors, Gears, Axles, Bearings, Springs, Magneto's, Generators, Clutches, Starters, Universal Joints, Radiators, Cushions, Wheels (Wood, Disk, Wire), Carburetors, Piston Rings and Pins, etc.

Always mention model and serial number in order.

Write us. All inquiries answered promptly

DOUGLAS AUTO PARTS CO., INC.
2003-5-7-9 South State St. Chicago, Ill.

DOWMETAL PISTONS

Lighter, stronger, and longer wearing than aluminum or iron. Can be fitted with bronze bushings in the wrist pin holes same as in iron pistons. Dowmetal has no permanent growth. The expansion is little more than iron.

SEND FOR PARTICULARS

LAMBERT & MANN CO.
Cylinder and Crankshaft Grinding
215-21 N. Wood St. CHICAGO Phone West 4918

AUTO PARTS

SAVES 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.
316-18 NO. ILLINOIS ST. INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

ANY PART
for
ANY CAR
NEW
or
USED

Send for Catalogue
Cincinnati Auto Parts
& Wrecking Co.
712-714 Walnut St.
CINCINNATI, OHIO
Parts our middle name

AUTO Save 50-90% PARTS

NEW AND USED GEARS, AXLES, BEARINGS, SPRINGS, MAGNETOS, GENERATORS, ETC. JOBBERS IN BANKRUPT AUTO SUPPLIES.

BRIGHTMAN AUTO EXCHANGE

321 Windsor Ave. HARTFORD, CONN.

MITCHELL, COLUMBIA, LIBERTY, STEPHENS and PREMIER. Parts for all models. Discount to the trade. Mitchell Co., 421 W. 55th St., New York.

ADDRESS: FORD RIDEASY, 223 Grand Ave., W. Detroit, Michigan. Absolutely kills the chatter shocks and irons out the rocking rebounds.

PLATING AND REFINISHING

NICKELPLATING

SILVER—GOLD—BRASS—COPPER

AUTOPARTS REFINISHED

AUTOLAMP & REPAIR CO., 1249 Michigan Ave., Chicago.

BUSINESS OPPORTUNITIES

FOR SALE—Best located Garage in city of 3,000, located on 5 Highways. Only transcontinental route open year round. Wonderful health center. Postal brings details. HIGHWAY GARAGE, Deming, New Mex.

PATENT—Only practical Auto Stop Direction Signal; sale or royalty. F. Cox, 27 West Ohio St., Chicago.

INFORMATION

Six cents a word is the rate for all undisplayed advertisements set solid, regular want ad style; all capitals, 9c. a word; all capitals leaded, 12c. a word; minimum charge \$1 an insertion; payable in advance (see next paragraph).

Ten per cent discount if one payment is made in advance for four or more consecutive insertions. Advertisements other than "Positions Wanted" will be billed monthly if run more than four times.

Add five words for address if replies are to come to a box number address at any of our offices. These replies are forwarded each day as received, in new envelopes, at no extra charge.

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The right is reserved to refuse any advertisement and also to rewrite and edit copy furnished whenever the publishers consider it advisable to do this.

THE BROADCASTER DEPARTMENT

THE CLASS JOURNAL COMPANY

239 W. 39th St., New York
5 S. Wabash Ave., Chicago

PATENTS and PATENT ATTORNEYS

Attorney-at-Law and Solicitor of Patents

C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.

McGill Building, WASHINGTON, D. C.

PATENTS

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PROMPTNESS ASSURED BEST RESULTS

Send drawing or model for examination and report as to patentability

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Offices 639 F St., Washington, D. C. 10 Monadnock Block, Chicago. 341 Leader News Bldg., Cleveland, O.

PATENTS—Write for my free Guide Books, "How to Obtain a Patent" and "Invention and Industry" and "Record of Invention" blank before disclosing inventions. Send model or sketch of your invention for instructions. Promptness assured. No charge for above information. Clarence A. O'Brien, Registered Patent Lawyer, 232-B Security Bank Building, directly across street from Patent Office, Washington, D. C.

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SALESMEN AND DISTRIBUTORS WANTED

The originator of the valve-in-head motor and founder of the Buick automobile has perfected the simplest and most efficient carburetor in the world. Mr. Buick considers the Buick-Hi-Power Carburetor his greatest achievement. Sold on guarantee to increase efficiency of motor 25% or money back. Write quick for details. David Buick Carburetor Corporation, 3934 McGraw Ave., Detroit, Michigan.

MISCELLANEOUS

EXPORTERS—We can increase your sales in Argentina and Uruguay; commission basis. References. Class Journal Company. James Downey, Calle Bartolome Mitre 966, Buenos Aires, Argentina.

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GARAGE TOOL SALESMEN

Wanted by substantial manufacturer of complete line hand-forged tools. Established 17 years. Desirable protected territory still available. Unusual opportunity. Good income with small investment in samples and stock. Write fully, giving references, past connections. Appointments made at once if qualified. Plomb Tool Co., Los Angeles, Calif.

WANTED SALESMAN for stamping and tools by an amply financed company. Plant located in central states. One who is able to assume responsibility of keeping plant filled with profitable business, for such an individual attractive proposition is offered. All correspondence held strictly confidential. Address Box 6294, care of MOTOR AGE, 5 S. Wabash Ave., Chicago, Ill.

SALESMEN—We are preparing to market through the Jobber and Dealer two devices destined to become popular and profitable sellers. Territories are now being allotted. Only experienced men of unquestionable standing considered. Write giving full particulars and territory preference. Hampton Automobile Products Co., Huntington, W. Va.

SALESMEN—To sell well known high grade precision Ball Bearings as side line. An excellent opportunity with permanent lucrative connection is offered to the man who can show results. Address Box 6200, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

SALESMAN WANTED—Experienced accessory salesman wanted to handle dash controls as a sideline. Richland Auto Parts Co., Mansfield, Ohio.

AUCTIONS

STATE OF INDIANA, COUNTY OF LAPORTE, ss: United States District Court for District of Indiana. In the matter of Triangle Steel Products Company, Inc., Bankrupt, in Bankruptcy No. 531. Notice is hereby given that by the order of Honorable Harry C. Sheridan, Referee in Bankruptcy, of said Court, the undersigned Trustee will on the 5th day of December, 1924, at Eleven o'clock A. M., sell at public auction on the premises of the Triangle Steel Products Company, Inc., of Michigan City, Indiana, all the assets and property of the said company, excepting accounts and bills receivable and choses in action. The sale will be made of the said property either as a whole or in such lots and parcels as may be desired, for cash in hand, and free and clear of any and all liens and encumbrances; such sale shall be subject to the approval of the said Referee in Bankruptcy. WALTER GREENEBAUM, Trustee in Bankruptcy.

RACING EQUIPMENT

DUESENBERG RACERS—Have two 16 valve, 4 cylinder 360 cubic inch dirt track, record racing cars for sale at right price. Also spare parts including cylinder block, crank case, crank shafts, rods, pistons, bearing, cages, valves, etc., to go with them. Address Box 6190, care Motor Age, 5 South Wabash Avenue, Chicago, Ill.

FOR SALE—Six racing cars—4 polo cars—including 2 Millers, 2 Duesenbergs, and parts. Will sell one or all. Address Box 6201, care Motor Age, 5 S. Wabash Ave., Chicago, Ill.

Broadcaster Service Brings Together the Man with the Business Want and the Man Who Can Fill It.

ANY Pump Shaft Leak Permanently Repaired!



Prevent
This!

No trouble or fuss—just a little care—and you can make the worst pump shaft *permanently* tight with CONNEAUT Plastic Metallic Packing in a few minutes.

Molded in your hands like putty, you fit Conneaut into the stuffing box around shaft. It hardens forming a practically frictionless bearing—can later be "taken-up" for adjustment.

A steam, gasoline, oil and water tight packing with which you can make many quick, *profitable* repairs!

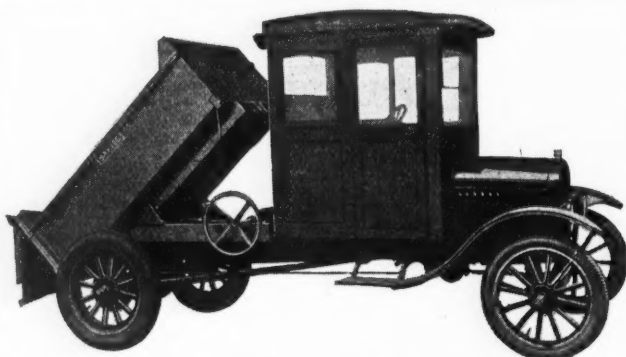
CONNEAUT PACKING CO.
CONNEAUT, OHIO



Comes in one
and 5-lb. cans.
List price \$1.65
per pound.

JOBBER:

A sample in
your salesman's
hands will
prove Conneaut
a "repeater"
with garage-
men. Write!



More chassis sales with this body!

A good truck chassis, 2-ton or less, equipped with a Saftee Dump Body is a combination that means bigger earnings for your prospects and better profits for you!

For contracting, municipal, farm and industrial uses—the most economical, safest, dependable dumping body. **BODY HELD AT ANY ANGLE WITHOUT LOCKING.**

All steel construction, solidly built. Easy to operate thru worm gear mechanism. Installed in 15 minutes!

Write now for full sales data!

THE DITWILER MFG. CO., GALION, OHIO
Also, makers of Automatic Dump Bodies

SAFTEE

Hand Operated

DUMP BODY

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- ✓ Solid Bronze Backs
- where bronze backs are used
- ✓ 100% Virgin Metal
- ✓ 10 Times Tested
in inspection
- ✓ Clean, Solid Babbitt
- no Blow Holes
- ✓ Machine Finished
both before and
after babbiting
- ✓ Not Over
a Day Away



You are bound to get the right bearings—every time—if you order from our handy, nationally used 68-page bearing guide, which lists practically every make of car, truck and tractor with Milwaukee Bearing stock numbers for each. Not-over-a-day-away from your shop is one of our 550 distributors, with a complete stock of the Milwaukee connecting rod and crankshaft bearings in sizes most in demand in your territory. Write for his name and free copy of bearing guide booklet.

Milwaukee Die Casting Co., Dept. F-11, Milwaukee, Wis.

MILWAUKEE Not Over a Day Away **BEARINGS**

"NORMA"

BALL BEARINGS



HOFFMANN

ROLLER BEARINGS

NORMA-HOFFMANN BEARINGS CORPORATION
ANABLE AVE., LONG ISLAND CITY, N.Y.

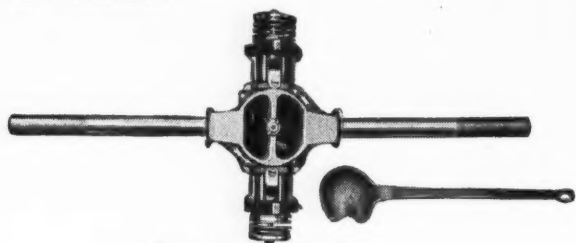
Extra Profits for You!

Hempy-Cooper Tools Do Main Bearing Jobs Cheaper Than Ford Factory Charge



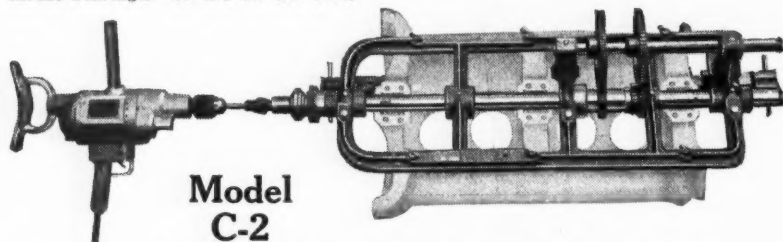
Model C-17

Combination Babbitt Furnace and Torch. Melts the Babbitt to proper temperature and holds it there. At the same time it melts out the old bearing. Leaves a clean dry seat for the new one. Economical.



Model H-40

Molds Fordson Main Bearings. Just like H.4 (for Fords) except special size. Casts flanges on end-thrust bearings. Shears off the core.



Model C-2

Bores all 3 Fordson Main Bearings in one operation. Just like C.1 (for Ford) described opposite except built to fit Fordson Block. Equipped with gauge for setting cutting tools and for measuring the facing of end-thrust bearings. Also socket for electric drill. Both C.1 and C.2 are accurate to $\frac{1}{2}$ -1000 of an inch and center from cam-shaft openings.

In 20 minutes, with Hempy-Cooper Rebabbiting Appliances, you can cast in all three Ford Main Bearings and bore them out in perfect alignment ready for the crankshaft. Your total cost for labor and materials runs only \$1.25 to \$1.50.

Model C.17 Babbitt Furnace melts the babbitt ready for pouring while it removes the old bearings from the block. Finishes the job in 40 seconds. Model H.4 (H.40 for Fordsons) then babbitts in the bearings. 3 minutes for this operation. Model C.1 (C.2 for Fordsons) then bores all 3 bearings in one operation, thus assuring perfect alignment. 5 minutes for this operation. Adjustable to worn crankshafts.

Contrast this simple, speedy, efficient Hempy-Cooper way with the old-fashioned method of reconditioning bearings. The old way takes from 3 to 8 hours. Even then the changed position of the crankshaft caused by reconditioning often causes noisy timing gears and customer dissatisfaction. An expensive job in more ways than one!

Ask Your Jobber

—for full information, prices, etc., on Hempy-Cooper Tools. Stop splitting your profits with Ford Assembly Plants or other shops. Stop tightening and reconditioning bearings the old way. Do the job right—the Hempy-Cooper way. Make friends of your repair customers. Phone or write your jobber today!

Made by
Hempy-
Cooper
Mfg. Co.

HEMPY-COOPER

Rebabbiting Appliances

412
Archibald
Ave.
Kansas City,
Mo.



*Preferred by
Men Who Know*

Any man is apt TO THINK HIS OWN PRODUCT IS BEST. In fact he will usually admit it without argument, BUT--

An Automobile, or a Portable Electric Drill usually get GOOD REPUTATIONS BECAUSE THE MEN WHO USE THEM FIND THEM SATISFACTORY.

Of course we are safe when we suggest that YOU GET THE OPINIONS OF MEN WHO ARE USING PORTABLE ELECTRIC DRILLS.

BECAUSE WE TRIED IT FIRST OURSELVES and 92% of the men we asked said they preferred--

BLACK & DECKER

"With the Pistol Grip and Trigger Switch"

Your own jobber can supply them.

THE BLACK & DECKER MFG. CO.

Towson, Maryland, U. S. A. Lyman Tube Bldg., Montreal, P. Q.

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BACKGROUND PAT. 1924
B & D MFG. CO.



Growing Steadily Stronger

IN EVERY section of the country, powerful selling organizations are being attracted by the possibilities of the Chandler franchise.

Within the past few weeks new distributors have been appointed in Baltimore, Chattanooga, Denver, Fort Worth, Memphis, Miami and Omaha—to say nothing of numerous dealers.

The same opportunities that interested them should interest you—something to keep in mind in making your plans for 1925.

CHANDLER

THE CHANDLER MOTOR CAR COMPANY · CLEVELAND
Export Department, 1819 Broadway, New York City
Cable Address, "Chanmotor"